VOLUME 6

EXHIBITS

TRANSCRIPT OF RECORD

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1954

No. 162

UNITED STATES OF AMERICA, APPELLANT

vs.

E. I. DU PONT DE NEMOURS AND COMPANY

PEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

FILED JUNE 23, 1954

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90	4/24/47, Kraft Foods Co. Trade Report	208	4363
91	11/19/47, E. J. Brach & Sons Trade Report	209	4364
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109	July '34, Modern Packagine Article—Frozen Foods	234	4389
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111	3/9/39, Gorton Pew Fisheries Co.—Trade Report	243	4398
112	11/6/39, Gorton Pew Fisheries Co.—Trade Report	244	4499
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115	Nov. '46, Extract—Frozen Foods Sales Test	250	4405
116	Sept. '48, Locker Management Article—What are the Better Wraps? What do they cost?	258	4413
117	1/26/48, A. D. Atterbury Co. Trade Report	262	4417
118	1/21/48, Snow Crop Marketers Trade Report	263	4418
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130	June '49, OFF's Annual Packaging Review	279	4434
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171	6/12/45, Kraft Cheese Co. Trade Report	350	4500
172	10/27/48, Albers Super Markets Trade Report	351	4501
173	6/6/49, Great A. & P. Tea Co. Trade Report	352	4502
174	12/13/40, Busalacchi Bros. Trade Report	355	4505
175	Aug. 1940, Food Industries Article—Pliofilm for Meat, New Wrapper Solves Problem for Packers	356	4506
176	1/2/48, Wm. Temple Co. Trade Report	359	4509
177	3/22/33, A. J. Kasper Co. Trade Report	360	4510
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180	8/11/48, Horlick's Malted Milk Trade Report	363	4513
181	12/23/48, Duncan Coffee Co. Trade Report	364	4514
182	9/19/39, Chr. Hansen's Lab Trade Report	365	4515
183	5/22/40, Experiment—Cake Mix in Cellophane	366	4516
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187	8/25/33, Northwestern & East Trade Report	376	4523
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191	5/19/32 letter, O. F. Benz to L. A. Yerkes	381	4528
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193	7/18/34, Experiment—Cigarette Wrapping Materials	385	4532
194	7/16/37, Bulletin—Foil on Cigars	395	4542
195	8/2/37, Experiment—Foil v. Cellophane as a Cigar Wrap	398	4545
196	5/3/38, Bulletin—Cigar Protection	405	4552
197	1/13/39, Scotten-Dillon Co. Trade Report	407	4554
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199	2/27/39, Webster Eisenlohr Trade Report	411	4558
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206	2/4/48, Brown & Williamson Trade Report	425	4572
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209	5/4/49, S. Frieder & Sons Trade Report	434	4581
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216	2/21/49, Pepperell Mfg Co. Trade Report	445	4592
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220	2/11/41, Marathon Paper Mills Trade Report	450	4597
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237	May 1934, Modern Packaging Ad—Wrapping Machinery	470	4615
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287	Nov. 1940, Modern Packaging, Aluminum Foil Ad	523	4668
288	Jan. 1941, Modern Packaging, Sylvania Cellophane Ad	524	4669
289	Jan. 1930, Food Industries Article—Packaging Materials	525	4670
290	Mar. 1935, Food Industries Article—Wrappings	536	4681
291	8/5/37, Extract—Nat. Bureau of Standards Publication Permeability of Membranes to Water Vapor	539	4684
292	(No date), Modern Packaging Encyclopedia—Metal Foils	545	4690
293	May 1944, Modern Packaging Article—Vegetable Parchment	549	4694
294	Nov. 1945, Modern Packaging Article—Glassine	555	4700
295	1947, Paper Year Book Article—Waxed Papers	559	4704
296	1947, Paper Year Book Article—Glassine and Greaseproof	562	4707
297	1947, Paper Year Book Article—Bag Stock	567	4712
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328	12/13/44 letter, C. L. Blair to W. J. Harte	634	4775
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332	3/13/47 letter, C. F. Brown to T. L. Hines	638	4779
333	8/18/47, Bulletin—Increases in Prices of Packaging Materials	639	4780
334	7/8/49 letter, C. A. Haley to A. Kunsman	640	4781
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366	Nov. 1939, Extract—Monthly Report of Cellophane Division	684	4825
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370	12/30/46, Announcement of du Pont One Price Policy	692	4833
371	2/7/47, Extract from Monthly Sales Report	693	4834
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373	8/22/47, Announcement of du Pont Price Changes and enclosures	697	4838
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378	6/22/48, Prices of Packaging Materials	708	48449
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380	4/1/49, H. C. Broems to F. Tilney	710	48551
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384	8/25/50, Announcement of Increase in Converter Discount by du Pont	714	48555
385	8/25/50, Announcement of du Pont Price Changes	715	48556
386	1924–1950, Table—Du Pont Cellophane Production Statistics	716	48557
387	1950, Table—Du Pont Cellophane Technical Activities Expense	717	48558
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810	5/19/41 letter, G. H. Andrews to E. C. E	1712	5505
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1020A, B, & C	Rhinelander Price Sheets	2508	6041
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GOV'T EXHIBIT NO. 2811
Civil Action 1216

C O P Y

WILLIAM S. PRITCHARD
Counsellor at Law, Patent Attorney
475 Fifth Ave.
New York

August 4, 1932

Mr. Benjamin M. May, Vice President,
Du Pont Cellophane Company, Inc.,
350 Fifth Avenue,
New York City.

Dear Mr. May:

Re: SYLVANIA SUIT

This is to confirm my conversation with you this morning as to my visit to the office of Stanwood S. Menken, general counsel for Sylvania Industrial Corporation. The purpose of my visit was to ascertain whether or not the Sylvania Industrial Corporation of Virginia could properly assume the liability for the infringing acts of the Sylvania Industrial Corporation of Delaware. The question was whether such an agreement might be ultra vires.

I was shown what was purported to be a copy of the bill of sale from the Delaware Corporation to the Virginia Corporation. In the bill of sale the Virginia Corporation purchased all of the assets of the Delaware Corporation and assumed liability for all the debts and obligations of the Delaware Corporation. In my opinion this would be sufficient. I believe, however, that we should see the original document and not what is purported to be a copy thereof.

During the conference, Mr. Menken stated that in his opinion the case should be settled. He said that they were very

[redacted]

fearful of what the result would be to their company in the event they succeeded in having the claims of the patents which are involved in the litigation held invalid. He seemed to realize the old adage that the defendant can never win. In other words, the Sylvania Industrial Corporation is in a very bad position. If the Du Pont Cellophane Company succeeds and the patents are held to be infringed, Sylvania Industrial Corporation will be under injunction and will be obliged to stop manufacturing moistureproof wrapping tissue. On the other hand, if they succeed in having the broad claims of the patents held invalid they will throw the art open, as far as the broad claims are concerned, to anyone and therefore will have additional competition. The Sylvania Industrial Corporation, as Mr. Menken explained, has plenty of ready cash but are hesitant about enlarging their plant facilities pending the litigation since, if successful, they will only invite further competition.

As I told you, I am not at all certain that Mr. Menken has given me all the reasons why he believes the suit should be settled. He has given the only reason which he can give without admitting he is fearful that the patents will be sustained.

I informed Mr. Menken that I would convey his message to the officers of the company. He stated that he thought a conference should be had to discuss settlement, at which time they would lay their cards on the table. If this means that Sylvania will disclose to us their defenses other than those set up in the

Answer, then the conference will be well worth while even though no settlement developed therefrom. You appreciate that unless Sylvania is willing to do this that the conference will not accomplish anything, since Mr. Biesterfeld and I feel more confident every day as to the strength of Du Pont's position in this litigation. In other words, all the work that we have been doing tends to confirm the fact that Du Pont has reasonably good chances to succeed in the litigation.

I am of the opinion that Mr. Menken is too good a trader not to realize that any further negotiations for settlement must be made before the suit is tried. Once the suit is tried and Du Pont is successful he must appreciate that any offer of settlement would be futile. On the other hand, should the suit be tried and the broad claims of the patents involved in the suit be held to be invalid (a thing which we do not expect) then it would be too late to suggest settlement. As far as I can see, no harm can be done by having a further discussion of the matter and something may be accomplished. Some of the officers of the Du Pont Cellophane Company were in favor of a settlement and an offer was made to Dr. Wallach. To that end it is barely possible that a conference might cause the officers of the Sylvania Industrial Corporation to accept the terms offered provided, of course, that the company still cares to continue that offer. I believe that Mr. May did not feel that the terms of settlement were adequate.

If any conference is had, I suggest that Mr. Biesterfeld and I should both be present since patent questions will have to be discussed in order to intelligently arrive at any conclusion. As I told you. I do not feel that our situation should cause us any uneasiness and that if such a conference took place we might get information which would be very valuable in preparation for trial.

In accordance with my telephone conference with you, I am writing Mr. Menken telling him that I conveyed his message to you and suggesting that if they wish another conference that Dr. Wallach can take the matter up with Mr. John E. Hatt.

While I expect to be away the week after next at Cape Cod working on this case, I will be glad to return for any conference. It is only over night by boat.

In forwarding the information contained in this letter to the officers of the parent company, please be sure to impress upon them the reason why I advise a further conference is not because I see any weakness in our case, which has not already been discounted, but because I feel that we may find out information at the conference which may be valuable in preparation for trial.

Faithfully yours,

/s/ Wm. S. Pritchard

WSP/CS

cc: Mr. L.A.Yerkes
Mr. J.E.Hatt
Mr. C.H.Biesterfeld
Mr. F.M.Pralatowski

M 2077

GOV'T EXHIBIT NO. 2821
Civil Action 1216

CC: Mr. W. S. Pritchard

May 5 1931

alle and Company
atent- bteilung
iesbaden-Biebrich
Germany

Gentlemen:

Subject: Kalle German Application Case 449

We acknowledge receipt of your letter of April 10 in which you request that we do not file in the United States this application which relates to a process of preparing viscose from unaged alkali cellulose by ripening the viscose in the presence of oxygen to the desired viscosity.

We appreciate fully the basis for your request and we frequently have similar circumstances in the United States. It is quite true that there are certain types of inventions which, if published through the medium of an issued patent, can be used by competitors without our being able to detect infringement and we agree with you that this invention belongs in that class. We should like to say, though, that the fundamental reason why we file patent applications for our inventions is to prevent others from deliberately or accidentally filing an application for the same idea, securing patents and thus preventing us from enjoying the benefits of our own research. It may be true that others will infringe our patents because they believe we cannot detect the infringement, but it is not true that we infringe the patents owned by others on the same basis. It is therefore necessary for us frequently to file applications for our researches in order that we may feel secure in exploiting them although we fully realize that we may be in effect publishing a valuable research without being able to control its exploitation.

This present invention is potentially important to us and we should not like to feel that we may subsequently be prevented from using it by a patent issued covering it to others. We would also like to point out that the prosecution of a patent at the United States

atent Office is confidential between the applicant and the office and that we can file this application and carry it along for a great number of years without it becoming disclosed. If, after the claims have been allowed, it seems desirable not to issue the patent, we can then abandon it with no disclosure to the public and in the meantime we will have had the firmer security of a filed application to fall back on if activity of others in this direction is apparent.

Based on these observations, we would like to have your acquiescence in our filing this application and prosecuting it only as rigidly as is necessary, with the distinct understanding that we will not pay the filing fee and bring the patent to issue or otherwise put it into possibility of becoming public knowledge without your definite assent. Incidentally, our prosecution in the United States Patent Office may be valuable in guiding you in the prosecution of your German application up to the point of publication.

If you concur in our views, we will appreciate your kindness in signing the papers you now have and of returning them to us in good season for filing within the Convention period.

FILED

Yours very truly,

F. K. PRALATOWSKI
DIRECTOR OF PATENTS

Pralatowski

FKP:MLB

GOV'T EXHIBIT NO. 2854
Civil Action 1216

9027

CC: Messrs. M.D Lee - E K. Jladding

Buffalo, New York
March 1, 1935

J.E. Hatt

Mr. J.E. Hatt, G.M.
Du Pont Cellophane Co.
NEW YORK

3/14

CHARCH v. JENKINS-INTERFERENCE NO. 70,341

We have just received formal notice from the Patent Office advising us of the declaration of the above identified interference involving our Charch application U.S. Serial No. 461,840 and U.S. Patent No. 1,960,266 which issued May 29, 1934 to Russell L. Jenkins as assigned to Swann Research, Inc. of Anniston, Alabama. This interference results from our having copied ten claims of the issued patent into our Charch application.

The counts at issue in this interference are perhaps best exemplified by the two broadest claims which are as follows:

"Count 1. An article of manufacture comprising a sheet of film of cellulosic material coated with a chlorinated diaryl resin and a wax.

"Count 7. A moistureproofing composition comprising a chlorinated diphenyl resin and a wax."

Our Charch application Serial No. 461,840 is the Resin-Wax case which relates to moistureproofing compositions comprising a synthetic resin and a wax, useful for the moistureproofing of various base materials including cellulosic bases such as regenerated cellulose. We have disclosed in this Charch application three preferred species of resins suitable for the practice of the invention and these include chlorinated diphenyl resins which are referred to in the trade frequently as Aroclor resins. This same Charch application is already involved in an interference which turns about the use of vinyl ester resins, another of the preferred species described by Charch.

The Jenkins patent discloses only the chlorinated diphenyl resins and consequently the interference will be limited in scope to this particular species. This patent issued on an application which was filed October 19, 1932.

Our Charch application was filed June 17, 1930 which you will see is two years and four months prior to the filing date of the Jenkins case. Insofar as our own application is concerned, we believe there is considerable possibility that we can carry dates back to December of 1928 if need be, with several possible dates in 1929, on which we can rely, if we are forced to fall back to them. Of course, we are not familiar with the dates that Jenkins can furnish but even though he could allege dates prior to our filing date, there is the long delay of two years before his filing which he must

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explain. In other words, we are not only the senior party to this interference as at present advised, but we think also that our position is quite favorable towards a grant of priority.

As you know, the Du Pont Rayon Company has experienced interference situations with Swann Research in which Swann has preferred to settle rather than carry the interference through to its normal termination. It can easily be therefore that overtures will be made towards a settlement of this interference. As we see the situation now, admittedly in the absence of facts which Swann may be able to bring forth, we believe that we have a very good chance of winning this interference if it is allowed to proceed in the normal fashion. If a settlement is proposed therefore, we would hesitate as to considering any plan which would not be definitely advantageous to Du Pont despite the friendliness and apparently generous nature of Swann. We have in this interference a situation very similar to the other Resin-Wax interference in the United States which involves the vinyl resin species. We have covered in our Church application an apparently useful and desirable moistureproofing coating composition comprising a chlorinated diphenyl resin and a moistureproofing agent such as a wax. Our application can support the claims of the Jenkins patent which have already been admitted by the Examiner and indeed, it may be that we can successfully add several more claims from the Jenkins patent. In view of the position which we feel our application holds as regards priority of invention, we think that there is very little that we should concede in the event of an interference settlement. We might agree in the event that we are granted priority, to concede to Swann immunity from further consideration as a contributory infringer, but this concession would probably be of little value if it were even acceptable to Swann because after all, unless its customers could also be held free from infringement, they probably would not be interested in purchasing the Aroclor resins required. We could of course grant to Swann a license under the claims in Church which relate to chlorinated diphenyl resins, but unless we granted this with the right to sub-license, no advantage would be gained by Swann. We would be agreeable to a settlement of the interference for this would save considerable expense on both sides, but unless the settlement can be effected with considerable advantage to Du Pont, we think the interference should be permitted to take its usual course in the Patent Office.

We think therefore that this interference should be allowed to proceed in the normal fashion. If Swann proposes a settlement, we think their proposal should be entertained and if a settlement which is entirely satisfactory to Du Pont can be reached, such settlement should be made. In the absence of such satisfactory settlement of priority, the decision should be left to the Patent Office.

We invite your comments, but in the absence of such on or before Monday, March 11, 1935, we shall assume that you approve our proceeding with this interference in the normal way and we shall advise our attorney accordingly to arrange for the filing of preliminary statements and other papers which are required.

PATENT SERVICE

tf
WWS:RS

W.W. Smith

6141

GOV'T EXHIBIT NO. 4448
Civil Action 1218

CC: Mr. M. D. Lee--Dr. E. B.

Wilmington, Del.
January 10, 1940

Mr. L. A. Yerkes, Genl. Mgr.
Rayon Department
WILMINGTON

Subject: RAYONIER PULP & PAPER CO. CONTRACT

At the request of Dr. Benger I am sending you this memorandum for your use in any consideration you feel should be given to the question of renewing the Rayonier contract.

The effective date of the original Rayonier contract was September 27, 1930. Rayonier had no rayon pulp business before we started to work with them. As a matter of fact, they lacked the data essential to the manufacture of a good quality pulp suitable for rayon manufacture. The original contract states that du Pont represented that it had carried on extensive research work and experiments with respect to the development and improvement of sulphite pulp suitable for rayon and other cellulose products. Dr. Benger states that he believes that representation exaggerated somewhat the amount of development and research work that du Pont had done with pulps for the purposes mentioned.

Du Pont cooperated with Rayonier by making available one of its technical men who brought to Rayonier a fund of knowledge with regard to pulps from the rayon producer's point of view which undoubtedly meant more to Rayonier than simply the services of one individual and contributed considerably to their success.

The development of a pulp suitable for rayon and, incidentally, "Cellophane", its manufacture and sale has been a very profitable enterprise for Rayonier; in fact, it has been the most profitable end of Rayonier's business. In addition to the services of Dr. Pickens, du Pont cooperated with Rayonier during the past ten years by making available the time, services and technical help of its own organization to the end that Rayonier would be successful in its endeavors. It should be borne in mind that the benefits of such assistance would extend beyond the ten year period covered by the agreement.

M1355

Benefits Enjoyed by Du Pont

1. An option to purchase its pulp requirements up to 50,000 tons per year during the life of the agreement, beginning two years after the pulp became available.

2. Price for pulp to be no higher than lowest price at which pulp is sold to another purchaser in any given month.

3. Payments by Rayonier to du Pont on pulp purchases as follows, provided a minimum of 8,000 tons is taken during any year during the life of the agreement:

$3.75 per ton on pulp priced at $80. per ton, or more.
$3.25 per ton on pulp priced at $75. per ton, & less than $80.
$2.75 per ton at any price less than $75. per ton.

All prices f.o.b. Shelton.

The provisions of the agreement with respect to purchase arrangements have been adhered to, I am informed by Mr. A. C. Jones. Further, Mr. Bradshaw tells me that we have given considerable technical cooperation to Rayonier. We have evaluated pulps in our Semi-Works and made available to Dr. Pickens full and complete information regarding such tests, which is a degree of service and cooperation we render to no other supplier.

Terms

Article XIII of the agreement provides that the agreement will continue for a period of ten years, with a provision that if during that period du Pont has purchased an aggregate of 100,000 tons, du Pont may, within six months prior to the termination of the ten year period, extend said right and option for itself for a further period of five years.

Under date of November 13, 1931 an arrangement was proposed by Rayonier permitting sale of pulp to consumers outside of North America at prices less than North American prices. For this consideration Rayonier increased du Pont's technical compensation to $4.00 per ton. That arrangement was to apply for a period of 18 months beginning December 1, 1931. Subsequently, however, England went off the gold standard and certain international trade complications developed which required that Rayonier adjust its prices, and under date of May 17, 1932 the technical compensation above mentioned was reduced from $4.00 to $2.75 per ton.

Du Pont's agreement to Rayonier's selling at lower prices outside of North America continued to July 1, 1933. Du Pont's consent to the foregoing practice was not extended beyond the latter date and there is some suspicion that Rayonier has continued to sell at lower prices. This is one point which should be checked with them in an extension of the agreement.

M1355

To date du Pont has purchased from Rayonier a quantity of pulp in excess of the 100,000 tons specified as a minimum in Article XIII. Our dollar purchases for the period 1930 through October 1939 amounted to $10,385,000. In view of the contract's minimum stipulation, we have converted the dollar volume to tons on the basis of $70. per ton, which Mr. A. C. Jones believes to be somewhat on the high side and, therefore, a safe figure to use for this conversion. On that basis our total purchases through October 1939 (nine years) have been 148,357 tons. The attached sheet lists the dollar purchases by years.

We believe that another point that should be discussed with Rayonier in connection with an extension of the agreement is an increase in the limit of 50,000 tons specified in Article III, for the reason that our 1940 purchases will approximate that volume and it is conceivable that we will exceed that quantity in future years.

In view of du Pont's full and complete cooperation with Rayonier, the very definite contributions which du Pont has made to the success of their venture, and also because of the benefits which accrue to du Pont from the contract with Rayonier, we recommend that the rights of du Pont to extend the agreement for another five year period be exercised and that du Pont put such request in writing on or about March 27th, which is six months from the expiration date of the agreement. Such action is required according to the stipulations of Article XIII.

Incidentally, the original contract was drawn with Rainier Pulp & Paper Company, which company became Rayonier, Inc. in November, 1937. This latter company assumed the obligations of the original company in so far as our contract is concerned.

TECHNICAL DIVISION
Development Section

K. M. Horsey Jr.

R. M. Horsey
Director

H:w
encl.

DOLLAR PURCHASES FROM RAINIER PULP & PAPER CO.

1939	-	$1,599,000.	(10 months)
1938	-	1,790,000.	
1937	-	1,558,000.	
1936	-	1,108,000.	
1935	-	1,216,000.	
1934	-	[illegible],000.	
1933	-	790,000.	
1932	-	543,000.	
1931	-	787,000.	
1930	-	14,000.	
Total	-	$10,385,000.	

FILE COPY

Above figures supplied by:

Mr. E. J. Zimmer, Jr.
Trade Analysis Division

GOV'T EXHIBIT NO. 4449
Civil Action 1216

CC: [redacted]-B.M. MAY

E. I. DU PONT DE NEMOURS & COMPANY

EMPIRE STATE BUILDING
NEW YORK, N. Y.

"CELLOPHANE" DIVISION
MANUFACTURERS OF CELLULOSE FILM

L.A.Y.

January 23, 1940.

DR. E.B. BENGER, ASST. MGR.
TECHNICAL DIVISION.

Subject: DR. PICKENS' LETTER OF 1/16/40

Your note to T.L. Hines regarding Rayonier's request for information to enable them to erect a casting machine for casting film.

Management's position here is that we have no rights to give information regarding a casting machine which we originally obtained from the French to any other interests. Also that the tremendous amount of work and very substantial expense incurred in the last 15 years in developing this machine to its present state, has produced for us certain developments which we are not disposed to give to any one. These include our hopper, our draw-off rolls, the tension control, and the compositions of our baths, are all subjects which we do not disclose to others except where required to under our contractural agreements, and we do not feel that we are able to furnish prints or detailed information that would permit an outside concern to create a machine that included many of these practical details.

In addition, if we should do this, we would then be asked for further details like bath temperatures, bath compositions, casting machine speeds, drying temperatures, details of Humidification and a great many practical points which are the result of substantial experience and which we do not feel permitted or disposed to disclose.

In our technical arrangements with Rayonier we have always been willing to run for them any new or special pulp mixtures or material of varying qualities and to furnish them the details of results, but believe that our position is such that we cannot comply with their request to furnish them detailed information on which to construct what would amount to a practical operating machine. I do not know that we have a machine of the size they mention, namely 24 to 36" in width, for experimental purposes and if we do I assume it

M1489

Cellophane

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must be a rather makeshift unit for our own experimentation only.

If you disagree substantially with this position, I recommend that you discuss it with Mr. Yerkes.

J.E. HATT
DIVISION MANAGER

JEH:LWB

P.S. After reading this over it sounds like I was talking about building a full size casting machine. What I was trying to say was even in giving him plans, prints or details to make a small minature machine it should, for real benefit to either of us, be a practical replica of our present machine, and if we did this the disclosures of both equipment and process mentioned would still apply.

The part of a machine which Dr. Hyden has is really only a wet end and amounts to a makeshift operation. Even to operate this successfully Rayonier would have to have the details of "know-how", speed temperatures, etc., and unless we are obliged to I would prefer not to give them even this type of small machine because it would involve later additional information which we prefer not to disclose in many cases.

J.E.H.

M1489

GOV'T EXHIBIT NO. 4469
Civil Action 1216

BULLETIN BOOK

DU PONT CELLOPHANE

DU PONT CELLOPHANE COMPANY, INC.

NEW YORK, N.Y.

BULLETIN # 43-E
February 28, 1929

TO ALL SALESMEN

NEW CUSTOMS REGULATION IMPORTED SHEETING

For your information, the Customs Court has decided in favor of the DU PONT CELLOPHANE COMPANY that "Cellophane", or similar transparent sheets, shall be entered as a compound of Cellulose.

How else could it be classified? Well, for the last eight years or so, thru the efforts of those who were importing at that time, it was accepted by the Customs Appraisers as "gelatin in sheets". It was perfectly obvious what we should do, and we have been endeavoring to have correction made for three years.

A higher duty was not asked for - merely the proper classification. This calls for a higher duty, but not substantially so, and, regardless of the statements made by our kind competitors, we are not going to immediately increase the price of "Cellophane".

You know our policy of five years standing, and we know of no other plans for the future than to deliver "Cellophane" as economically to the user as our production costs permit.

Remember eight years ago when the then importers of "Cellophane", secured the reduction in tariff, they did not pass on the saving to the user, nor can we find any record of a price reduction during the time the importers brought "Cellophane" into the United States. In fact, they charged all the traffic would bear during periods of shortage.

You will probably hear various statements made by competitors, but just keep the above in mind and feel confident of your ground. Let the salesmen baiters have their fun, but do not let them get away with anything.

O. F. BENZ

Director of Sales

OFB:EH

M 859

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GOV'T EXHIBIT NO. 5542
Civil Action 1216

February 5, 1941

Mr. Wm. Heller, Vice President
Milprint, Inc.,
431 West Florida St.,
Milwaukee, Wisconsin.

Dear Mr. Heller:

This acknowledges your letter of January 28th on the subject of our cooperative and joint advertising allowances in the sale of "Cellophane" film.

I am quite interested in your point of view on this matter and I am sorry that you don't feel that our plan is equitable to all converters.

We very definitely think it is wholly fair and is the result of considerable thought as to the method in which we might compensate for unusual advertising effort, in part, with those of you who are soliciting sales from the same type of trade generally, to whom we market our material.

Perhaps primary selling, sales promotion and specialized advertising are all directed at the same end but they are not subjects that can be given equal importance, equal pressure or even equal expense in all cases and by and with various concerns, all generally offering materials in the same market but in which there are many diversified directions.

The only valid reason that we have for giving converters a discount from our established price list, is to partially reimburse them for their selling effort in selling converted "Cellophane" film to about the same class of trade to whom we might offer plain or unconverted film.

We sell to consumers whose purchases are greater in many cases in total dollars to us than the purchases of a great many, if not all, of our individual converters.

M-247

We were obliged to change from a quantity discount basis to converters to a definite uniform discount to converters by reason of the law of the land, because competition is involved between them and we have no recourse in this direction because we are not disposed to nor neither are we permitted to favor one converter against another where they compete.

In some cases converters desire to do a little advertising or promotional effort on their own account in addition to the major advertising campaigns presenting "Cellophane" film to the public, which is carried on by ourselves. This major advertising feature is all directed to make an acceptance of our material on the part of the public that makes it easier for your organization to sell our goods in your converted forms to the public.

Where some of these further advertising and promotional activities are involved we have, within a small range, been willing to match dollar for dollar with a restricted amount of total sales to our promotional converters, to enable them to carry on these functions in their interest.

We have not been willing to pay their sales expense nor their salaries and expense devoted to field sales work with any one because we make this contribution in our discount to the converter trade. This allowance in amount is greater than our total selling expense on our direct sales.

It has been our policy also to reduce our prices to the public generally on "Cellophane" film as rapidly as our cost of manufacture and increased volume would permit, and this in turn has made it possible for many more concerns to use our materials in both plain and converted forms at these lower prices than would have been the case had we maintained higher costs and selling prices with the consequent lower volume that would have resulted.

In our cooperative advertising allowances every dollar that we provide has to be matched by a dollar on the part of the converter, and so there is no opportunity in this for any money to be made on this arrangement, since it behooves each of us to see that we both get value received out of the money spent for this additional publicity.

We have no control over the activities of field representatives other than our own employees. We have no way of appraising or evaluating their performance and therefore cannot justly select any group of them of any converter as being directly promotional representatives for ourselves.

M-247

If the situation were reversed I think you would agree that our thought on this is correct and that the application of it must be in channels that can be definitely proven with visual evidence easily obtained, and that it contributes in a general constructive way to the increase of volume of "Cellophane" film sales.

I have taken occasion to review your letter with our Sales executives here and to discuss details at some length with the thought that it represented the mature opinion of a successful group and that we might benefit from it. The specific requests you make, however, we are not in shape to meet nor are we in a position to consider increasing our allowance for this type of effort under the present economic position of the manufacture and sale of cellulose film.

We hope that when you read this as our considered opinion of your thoughts on this subject, that you will agree that there is nothing here that is not equitable to our converter customers.

Yours very truly,

J.E. Hatt
Division Manager

JEH:LMB

M-247

GOVT EXHIBIT NO. 5544
Civil Action 1216

June 28, 1943

TO: T. L. KIMES - J. E. HATT

FROM: C. F. BROWN

POST-WAR SALES POLICY AND ORGANIZATION

The problem of setting up a sales program for the immediate post-war period and the rebuilding of a sales organization to carry it through successfully has been under study for several months.

While it is, of course, not possible to plan now in ultimate detail, it is possible and necessary to determine general principles of operation and organization.

To this end, the District Management and Wilmington staff were asked to submit their ideas in specific form and several meetings of the combined group have been held.

As a result, we are outlining a program which represents the unanimous recommendation of the sales executive groups as we see the problem at this time, based upon our experience and knowledge of the requirements of covering our trade and developing our business.

Naturally, our recommendations can be made only in light of present known factors, the present status of our business and present economic conditions. In submitting our recommendations, the following assumptions are made:

PLANT CAPACITY

At the end of the war our capacity will be about that of today, approximately 100,000,000 lbs. annually.

Within the first year post-war, we will add about 7,000,000 lbs. by removing bottlenecks at Sprunce and Old Hickory.

Within about 18 months we will have an additional 8-machine unit at Clinton with a capacity of approximately 18,000,000 lbs. annually.

Our production within 18 months to two years after the war will approximate 125,000,000 lbs.

SALES OBJECTIVE

100,000,000 lbs. the first year post-war, building up to an annual rate of 125,000,000 lbs. at the end of 18 months post-war.

SALES SITUATION AT WAR END

When peace comes we will automatically lose all the military business we have developed and also a large portion of our war-time metal replacement business (we are assuming 50%).

M 331

On the other hand, markets now closed to us by limitation order will be opened up - perhaps not all at once.

The following tabulation shows our sales problem:

	1941	1943 est.	Post-war Objective	Add'l.needed vs. 1943
Military	-	16,000,000	-	
Metal Replacement	-	6,000,000	3,300,000	
Civilian				
L-20 uses	23,000,000	-	23,000,000	23,000,000
Present uses	77,000,000	73,400,000	98,700,000	25,300,000
Total domestic	100,000,000	96,000,000	125,000,000	48,300,000

In 1941, we had 100,000,000 lbs. of unrestricted civilian business.

In 1943 we had lost on an annual rate approximately 23,000,000 by limitation orders and replaced this with almost an identical volume of military and metal replacement business.

At the war end, we will immediately lose this 16,000,000 lbs. of military business (and it may be very considerably more by that time) and probably half of our metal replacement business - around 3,000,000 lbs. This will reduce us to an annual rate of about 77,000,000 lbs. immediately.

Our first job is to replace this 19,000,000 lbs. of war business with 23,000,000 lbs. of civilian business -- to get back to 100,000,000 lbs. capacity in the shortest possible time. To do this we must increase civilian sales about 30% - within a few months if possible.

Speed is of great importance. If we do not do the job quickly, a substantial portion of our production organization will be lost or idle and our costs will mount.

If we are able to save one month in recapturing this 23,000,000 lbs., we will increase our operative direct earnings, at present costs, about $270,000 - plus reduction in unit costs on our total production due to this additional volume. (This amounts to over half the cost of the field sales force in 1941).

That is only the first job, however. Our objective is to increase that volume to 125,000,000 lbs. within 18 months, adding another 25,000,000 lbs., or a total increase from 77,000,000 to 125,000,000 lbs - (64%).

The above is the most favorable picture that can be presented of our post-war sales position.

The job may, and probably will be considerably more difficult. Our war and replacement business may be materially more at the war-end than at present -- giving us considerably more than 23,000,000 lbs. to replace quickly. Shortage of materials may reduce our war-time volume of production. Shortage of ingredients and labor may reduce the volume of our customers' sales before the war end.

M 331

[illegible] event, the first year post-war will bring the biggest job the sales group has yet undertaken.

COMPETITION

War-time shortage of transparent film has changed the competitive situation. Loyal customers who had never bought from the competitor have been forced to ask him for film, and in many cases they have been supplied in order to create post-war obligations. We will enter the post-war period with a more difficult competitive problem.

Post-war competition will be keener and broader. Sylvania will face the same situation that we do. The paper manufacturers from whom we must take our sales increases will make every effort to retain the business they have established during the war.

Additional capacity for competitive transparent films will come in during the second year after the war. Not only Sylvania, but Goodyear, Dow, Monsanto and others are preparing to go after the market on a more substantial basis - and we can probably look for broader competition on viscose films when our patents expire.

In spite of these problems, we have confidence we can maintain our position of leadership and attain our objectives with a proper and adequate program and organization which we are outlining in this report.

Obviously our plan will require revision depending on possible changes in conditions before the war end.

We desire at this time, however, to establish and obtain Management approval of operating principles and general structure of our post-war organization.

CELLOPHANE SELLING EXPENSE

In considering sales methods and types of distribution, the two major considerations are, of course - first, effectiveness; second, cost.

Before consideration of the relative effectiveness of different sales methods, it would be well to consider the relative importance of the cost factor in Cellophane selling.

Owing to the very large tonnage of our business and the high minimum unit of sale (500 lbs., $200.), Cellophane is a low selling expense industry.

With the growth of our business, per cent. of selling expense to gross sales has decreased from over 10% to 3.2%.

M 331

SELLING EXPENSE (Domestic)

	1941		1942		
Gross Receipts	$40,654,000		$34,926,000		
Selling Expense					
Advertising	$ 382,000	.9%	$ 330,000	.9%	
Wilmington	513,000	1.3%	488,000	1.4%	.006 per lb.
*B.O. and field	441,000	*1.1%	380,000	*1.1%	.004 per lb.
Total	1,316,000	3.2%	1,118,000	3.2%	

*Per cent of net receipts : 1941, 2.7% - 1942, 3.2%.

The total expense of the selling organization (omitting advertising) amounts to only 1 cent per lb. sold.

In considering methods of distribution, we are concerned only with branch office and salesmen's expense which at the maximum totaled $441,000 - 1.1% of gross sales or $.004 per lb. sold.

Whatever method of selling adopted would affect only our field selling expense, advertising would not be reduced by reason of a smaller sales force. Wilmington staff functions - technical, promotion and market research - would be just as necessary.

So in considering methods of sale and distribution from the standpoint of cost, we are dealing with a total of $.004 per lb. An increase of 10 salesmen at $7,000 each would mean only an increase or decrease of about $.0007 per lb.

Our major problem, particularly for the immediate post-war period, is not selling cost but selling efficiency and results.

POST-WAR SALES PROGRAM AND ORGANIZATION

DIRECT SALES

After consideration of other methods of selling and distribution, we have concluded that for the period immediately following the war, there is no other safe course than very aggressive, direct selling to the actual users and prospective users of our product.

Other methods which have been considered and their disadvantages are:

M 331

1. Agents or Brokers on a national or sectional basis.

Examples of such operations are Catty, Brooks and Zellerbach who are receiving a discount of 10%.
Owing to the particular situation on the Pacific Coast involving the advantage of local stocks, we favor continuation of the Zellerbach agency for the immediate post-war period.

The Catty and Brooks agencies are heritages of the days before Cellophane was manufactured in this country and started with a nucleus of large prospective users which they have continued to serve. A study has just been completed which shows that they have outlived their usefulness as unrestricted distributers of our product and the cost of this method of distribution is considerably more than the cost of direct solicitation. (See 3).

The study also shows that over 50% of their volume goes to large agreement accounts, and only about 5% to small users buying under 2,000 lbs. per year. All their worth-while trade is being covered by our sales force, as this has been proven necessary to effectively hold and build additional business with these users. As only an insignificant number of their customers are located in towns we are not already covering, we can take over this business direct at very small additional selling cost.

In 1941 we paid Catty and Brooks $172,200 in discounts on resale business only. This would have amounted to $225,400 at the present 10% rate - over half the entire cost of our field selling organization in 1941 - ($440,000).

We therefore recommend termination of the present unrestricted resale agency arrangement with Catty and Brooks and expansion of their present activities as converters of Cellophane.

This experience proves that agency or broker distribution of Cellophane is not profitable.

2. Jobber Distribution.

Our jobber policy (outside of Catty, Brooks, Zellerbach), has confined jobber distribution to the small trade in less than case lots.

We have carefully considered an extension of jobber distribution to the larger trade and are convinced that such a plan would be costly and hazardous in the immediate post war period for the following reasons:

The jobber carries hundreds of lines, continually competing for his interest and the selling time of his salesmen.

A jobbing operation is essentially a service rather than sales promotion activity.

Cellophane still needs promotional selling, if only for the reason it costs twice as much as its major competitor, paper.

M 331

The job[illegible] is not trained to do promotional [illegible]lling.

[illegible] job [illegible] major competitive materials, paper — [illegible] bus[illegible] built on sales of paper.

We recog[illegible] need of further training for our own men but coul[illegible] approach similar training with jobber men.

If the job[illegible] were in a position to sell in case lots, he would imme[illegible]ely solicit business already established by us. Every [illegible] account he took would cost us money.

The greater numbers and varieties of films make it impossible for us to insure use of proper films sold through jobbers.

We lose control of business placed through the jobber unless we contact his customers ourselves at double expense. As we expect more competition post-war, it would be hazardous to depend on someone else to hold or develop it for us.

For these reasons, we cannot see how we can expect the jobber to do a better job in building our business than we can do ourselves.

On the other hand, let us admit that he can and see what it would cost.

The [illegible] Paper Jobbers Association has published tables showing the average [illegible] of handling jobbing transactions according to "The Standard Method of [illegible]ounting and Costing for the Paper Distributing Trade."

These [illegible] show that to break even on a shipment from mill direct to jobber's customer on a $200. transaction (800 lbs.), the jobber needs a mark-up [illegible] cost of 7.4% to break even.

This checks rather closely the 10% we pay our agents.

As will be shown below, it costs us far less to handle our business direct with [illegible].

While we do not favor development of case lot industrial business as yet by the jobber, we [illegible] he has an important place in our program - as the medium of distribution to the thousands of retail stores and small establishments, many of which he now calls on - a large market not as yet adequately exploited.

We plan to assign a [illegible] this market with a view to determining its potential, [illegible] of approach and a practical sales plan that would interest the [illegible].

M 331

Direct Distribution to Users of Cellophane.

[illegible] business has been built on this principle - and [illegible] major reason for progress in sales.

We have always believed that the function of our salesman is to promote the use of Cellophane at the points where used.

Our contacts have therefore been based on points of [illegible] points influencing use, not alone on points of [illegible]. We [illegible] to sell the man who sells the package and the man who uses the Cellophane. The Purchasing Agent is not interested in a more expensive material until he receives instructions to buy it.

The points of contact and the individuals who can influence adoption of Cellophane vary in every organization. There is also [illegible] from a service standpoint that requires [illegible] in some cases for that reason.

Experience has shown that arbitrary selling rates cannot be established and followed on a blanket basis. The number of calls needed depends on the potential volume, the conditions surrounding the account, their methods of operation, their location and the individuals involved. This can only be determined by the men who know the customer - the District Manager and the salesman.

The same reasoning applies to converter accounts. Where they involve important volume or where our efforts are needed to increase or hold the business, we should call. In other cases, we should not.

[illegible] converters have other materials to sell than ours - glassine, foil [illegible] transparent films. War-time shortages have resulted in greater [illegible] activity in these directions. Post-war competition will probably continue this trend. We need to protect and develop our important [illegible] at the points where it is used - whether the customer makes his own bags or buys fabricated bags is essentially immaterial - and may [illegible] at any time.

[illegible] to say, we should spend our selling time in each account with the consideration of the volume of business involved.

[illegible] factor which should [illegible] is the competitive situation post-war, particularly with [illegible]. We have every reason to believe their policy of direct solicitation will be continued.

[illegible] addition, the Management is now working on a narrower quantity [illegible]. We are heartily in favor of such a move, but it will [illegible] competitive hazards due to a lower penalty to the competition [illegible] our agreement accounts.

[illegible] the concensus of opinion of the sales group that our established [illegible] selling be continued during the immediate post-war period - [illegible], direct selling to the actual users of Cellophane.

M 3.3

The Management can rest assured [illegible] be made to conserve selling time and expense as directly consistently in relation to the potential volume of business [illegible] surrounding each individual account.

* * * * * * * * *

Like many organizations, we have a relatively small number of accounts that comprise the majority of our business.

However, the value of smaller accounts in their influencing and forcing the larger organizations into Cellophane (and keeping them there), cannot be overlooked. We have used the small accounts to break into practically every new field and are using them today in many cases to keep the big ones in line.

It has already been shown that we are covering all trade, large and small at a field selling expense of $.004 per lb. What about the smaller trade alone?

In 1941 our 52 largest accounts purchased 70,000,000 lbs., all other customers 30,000,000 lbs.

Let's assume no selling expense whatever on the 70,000,000 lbs. and throw it all against the 30,000,000.

On this basis it cost $440,000 to sell 30,000,000 lbs., or $18,000,000 gross sales. It cost 3.7% of gross sales as against 10% agent's discount -- as against 7.4% jobber break-even mark-up.

The above expense also includes all calls made on agents' and converters' customers and on prospects not buying.

Let's take this a step further -- take the largest and most expensive territories we have to travel - W. C. Clark in Texas, Oklahoma; Calkins in Missouri, Kansas, Oklahoma. Here is what it cost to solicit an account buying 2,000 lbs. per year (our minimum selling potential), in these territories during 1941 when normal coverage of all trade was made

1941	Calkins	Clark
Salary	$4,150.	$3,500.
Extra Compensation	1,034.	1,075.
Traveling expense	3,281.	2,900.
Total expense	$8,465.	$7,475.
Branch office expense	4,100.	4,100.
	$11,565.	$11,575.
Number of calls made	1,566.	1,926
Average cost per call	$ 7.36	$ 6.00

M 7-21

A customer buying 8,000 lbs. per year pays us about $800. The maximum number of calls we would normally make on such an account would be 6 per year costing Calkins $44.10, Clark $36.00. Percent selling to gross sales: Calkins 5.5% (.022 per lb.); Clark 4.5% (.018 per lb.). This compares with agents' discount of 10%, jobbers' break-even mark-up of 7.4%.

/Branch office expense shown includes all expense but territorial salesmen - (total office, district executives and district specialty salesmen), divided by number of territorial salesmen (15).

* * * * * * * * * * *

In our opinion, we can afford to cover our smaller trade direct as we have in the past.

The large saving in discounts to Brooks and Catty will result in still lower selling costs or will go to offset any increases in the cost of our post-war program.

We also feel that there is an intangible but important advantage of direct representation in the trade by Du Pont men. We have made a large investment in our training courses for the purpose of building better Du Pont representation as well as better Cellophane salesmen. Transferring of representation to outside organizations would hardly be compatible with the motives behind this investment.

<u>Recommendations regarding direct sales force.</u>

Our study and consultations with the district staff groups indicates we will need the number of territorial salesmen we had in 1941 (42), plus 3 to strengthen our position in strong Brooks and Catty territories - total 45. (At present there are 30 sales territories).

These extra men can be obtained only gradually after the war end - so we would start with less and feel our way towards this objective. Possibly we will find we do not need them all.

The sales group is also agreed that we have outlived our present district set-up and would considerably increase the productivity of our field selling by a larger number of districts, permitting smaller operating units.

Such a plan was set up and discussed with the Management in considerable detail in 1942 but action was postponed.

We believe the need in the post-war period will be greater. The following advantages would, in our opinion, be gained:

M 321

The work of the district executives would be concentrated, with fewer salesmen to supervise and train their personnel who would be more highly paid.

They would be able to give more time to a smaller group of important house accounts. Accounts of this type need to be contacted by executives.

Today their experience and activities are too diluted. With concentration, better and quicker results could be achieved.

There is also a certain amount of prestige and sales advantage attached to a local office operation and personnel that become regarded as "local" people.

In our opinion the maximum effective size of a district is 8 sales territories, a district manager and assistant plus however salesmen it might become advisable to assign on special development or technical work. In some sections for geographical reasons, smaller districts with fewer personnel are advisable.

A map is attached showing a new district set-up which in light of today's conditions seems the most practical to work towards.

Converter Sales.

We are planning now for an expansion of our converter distribution post-war - both in numbers and geographically - particularly to prepare for convenient national distribution to service our largest market - the baking industry.

It is therefore planned to assign additional salesmen, trained for regular converter contacts - probably 4 instead of 2.

One of our major converter problems has been the development of low-cost printing.

We have lost considerable tonnage in the past to low-cost competition.

In addition, our chief objective product-wise post-war is white bread where cost is the controlling factor.

Within a short time an experienced cost engineer from one of our plants will be assigned to spend his entire time to develop methods of reducing the cost of printing Cellophane.

Greater Management and staff attention, as well as greater man-power in the field is needed to control and develop our converter business post-war particularly due to increased number and improved quality of competitive materials.

• • • • • • • • • •

As we see it at this time, our first job in building our post-war organization is to obtain, and train when needed, sufficient territorial salesmen to meet requirements and to set up the smaller district units.

This will be a gradual process as men become available and will give opportunity for proving needs as we go along.

We later plan to assign some of the more experienced salesmen to the development of certain of the newer uses for Cellophane, particularly along the lines of purely functional packaging. This will permit the regular territorial salesmen to concentrate on the main job of regaining and building tonnage from established uses.

It is also planned to assign one or more salesmen to work with jobbers in developing the small user markets and two or three engineering service men which will be needed particularly during the period when wrapping machines will be shifted from paper to Cellophane.

* * * * * * * * * *

We desire Management approval at this time on the principles of operation and the general structure of organization outlined, in order that we will be in a position to work towards the objectives set up.

Study has also been made of the various Wilmington Staff functions from a post-war standpoint. No radical changes from present and past general practice are envisioned but certain improvements in set-up and scope are being planned.

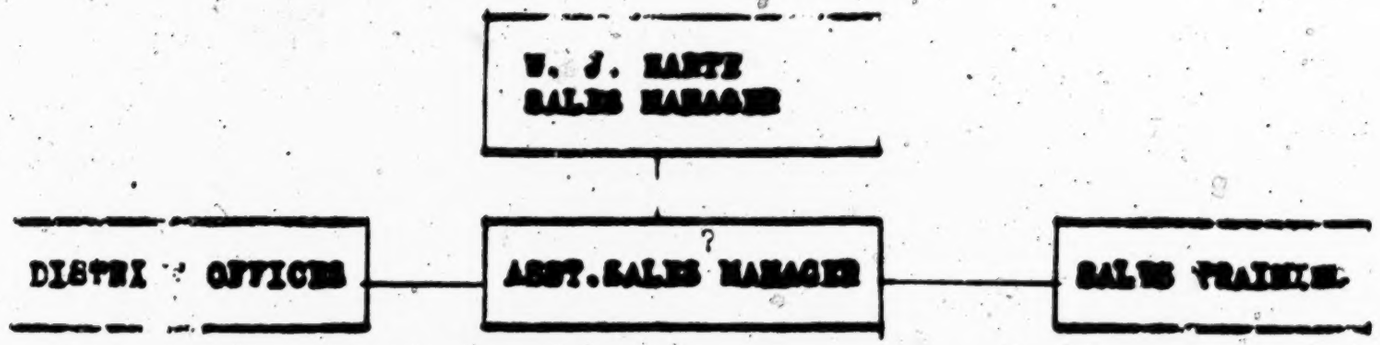
Report on this section of our organization for the post-war period will follow.

M 331

PROPOSED DIRECT SALES POST-WAR ORGANIZATION

W. J. HARTE
SALES MANAGER

DISTRICT OFFICES — ASST. SALES MANAGER ? — SALES TRAINING



	Dist. Mgr.	Asst. D.M.	Salesmen
NEW YORK ✓	1	1	8
BOSTON ✓	1	-	6
PHILADELPHIA ✓	1	1	7
CLEVELAND	1	1*	8
CHICAGO ✓	1	1	7
[illegible] ✓	1	1*	8
[illegible] ✓	1	1	7
SAN FRANCISCO ✓	1	-	8
[illegible]	[illegible]		[illegible]

[illegible] districts the Ass[illegible] District Manager [illegible] ing and develop[illegible]

6384

Nov 1 1941

E.C.Lake (2)
O.E.Adamson
B.C.Robbins
Date 10/29/41

CONVERTER ADVERTISING ALLOWANCE REPORT

CONVERTER NAME	To Oct. 1 Our Share Net Dollar Purchases To Date	Our Share Maximum Possible Allowance To Date	Our Share Approved Estimated Expenditures To Date	Our Share Future Estimated Expenditures Submitted	Our Share 1941 Forecasted Expenditures
Brooks Paper Company (for converting)	$ 135,050	$ 3,376	2,444.92		2,000.00
Caton Printing Company	15,203	380	55.00		100.00
H. D. Catty Corporation (for converting)	154,642	3,886	1,584.82		2,000.00
Cupples-Hesse Env. & Lith. Company	39,823	995	-	175.00	200.00
Dennison Manufacturing Company	111,951	2,799	1,041.07		4,000.00
Dobeckmun Company	1,034,580	25,865	4,715.59		10,000.00
Humitube Manufacturing Company	124,783	3,119	1,842.04		3,000.00
Milprint, Incorporated	1,460,345	36,509	10,118.59		10,000.00
Munson Bag Company	87,471	2,187	200.00		200.00
Nashua Gummed & Coated Paper Company	198,456	4,967	2,057.02	1,000.00	3,000.00
Paper Supply Company	27,633	690	-	900.00	1,000.00
Shellmar Products Company	1,927,826	48,196	11,437.65	9,647.33	25,000.00
Traver Corporation	291,676	7,292	829.33		1,000.00
Cellucraft Products Co.	35,814	895	281.00		-
Totals	6,645,253	141,156	36,606.64	11,722.33	62,000.00
Estimated new participants					10,000.00

M1415

3865

GOV'T EXHIBIT NO. 545
Civil Action 1216

GOV'T EXHIBIT NO. 1483
Civil Action 1216

EXCERPT FROM REPORT DATED APRIL 23, 1926 TO BOARD OF DIRECTORS OF DU PONT CELLOPHANE COMPANY INC. FROM L. A. YERKES, PRESIDENT. PAGES 1, 7 AND 8.

Buffalo, N. Y.
April 25, 1926.

TO : BOARD OF DIRECTORS
DU PONT CELLOPHANE COMPANY, INC.

FROM : L. A. YERKES
PRESIDENT

We are submitting herewith a report by Mr. Benz, Sales Manager, giving a general review of the Cellophane situation divided in accordance with our sales to the trade by definite classifications.

32

CANDY

"The use of Cellophane continues satisfactory in this industry.

"The use of Cellophane for small bar candies has increased and we are continuing our work in this direction.

"Some of the larger operators have started to wrap a cheaper grade of boxed candy which has not heretofore been wrapped.

"This industry is well posted on the advantages of Cellophane and each price reduction we make opens up new opportunities in wrapping lower priced goods and small units.

BAKERS

"Our best development work has been done in the baking industry. There are a substantial number of bakers using Cellophane to wrap cookies, doughnuts, cake and as a window for a pie box.

"There seems to be no large cookie bakers who are not now using Cellophane and we feel responsible for many of the present cookie bakers being in business, as it was not a standard line with them when they were first approached.

"The largest chain grocery company (A&P) have started to use Cellophane to wrap a half dozen doughnuts for one of their large Eastern divisions, (approx. 1000 stores). They are so successful, we expect to sell other divisions on the same proposition.

M834

BOX AND CAN MEANS

"This industry is slow to develop and our work would indicate several reasons: Cost of Cellophane; lack of automatic applying machinery and the shrinkage of Cellophane.

"Gelatine is largely used for windows and it has been so unsatisfactory that most box makers will not consider making more window boxes.

"Many of them are favorably impressed with the possibilities of merchandising goods in window boxes, but refuse to consider hand application. We are endeavoring to interest several machine companies to develop an automatic application.

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"No one has as yet made a success of fabricating a complete box of Cellophane.

"Two interesting propositions in the can industry are under development,--one, a Cellophane drumhead can for a vegetable lard, taking advantage of the grease-proof qualities of Cellophane, and the other, a drumhead can for general products.

"Both are dependent on a satisfactory automatic mechanical application of Cellophane which is now under development.

MISCELLANEOUS

There are many uses for Cellophane not included in the foregoing which mean in the aggregate, a substantial volume of business. Some of these are wrapping books, rubber sponges, pen knives, tea cans, honey, gifts, novelties, etc., and also the use of Cellophane in astock ticker projection machine, in the vulcanizing of false teeth plates and in a process of hair waving.

Our various trade journal and general advertising helps to develop leads outside the regular channels. In addition, our men make many calls on concerns in industries not considered worthy of concentrated attention.

"Two automatic wrapping machines handling Cellophane are now in operation and working satisfactorily. There is an increasing interest in this proposition and we look for a number of machines to be put into operation during the year.

M834

7050

7050

PRICE

"This is still our main obstacle in selling Cellophane and will probably be with us always.

"Last year we consider our price reduction gave us the real opportunity with the Grennan Cake Company and this year our price reduction brought into the fold the Ward Baking Company and the A & P in a larger way than they previously planned for.

39

"Each reduction brings us new opportunities and customers, and a more friendly attitude on the part of our present customers.

"There are one or more concerns bootlegging Cellophane from the Continent and are disturbing the market, doing a volume, as near as we can estimate, of between ten and fifteen thousand pounds per month."

M834

TABLE 6

GOV'T EXHIBIT NO. 538
Civil Action 1216

CASTING MACHINES IN OPERATION PRODUCING CELLOPHANE BY COMPANY

YEAR	NUMBER OF CASTING MACHINES IN OPERATION			PERCENT OF TOTAL	
	TOTAL	DU PONT	SYLVANIA	DU PONT	SYLVANIA
1924	2	2	-	100.0	-
1925	3	3	-	100.0	-
1926	4	4	-	100.0	-
1927	4	4	-	100.0	-
1928	6	6	-	100.0	-
1929	13	13	-	100.0	-
1930	32	29	3	90.6	9.4
1931	38	32	6	84.2	15.8
1932	44	36	8	81.8	18.2
1933	50	40	10	80.0	20.0
1934	52	40	12	76.9	23.1
1935	47	32	15	68.1	31.9
1936	57	40	17	70.2	29.8
1937	61	43	18	70.5	29.5
1938	67	48	19	71.6	28.4
1939	67	48	19	71.6	28.4
1940	67	48	19	71.6	28.4
1941	77	56	21	72.7	27.3
1942	77	56	21	72.7	27.3
1943	69	48	21	69.6	30.4
1944	69	48	21	69.6	30.4
1945	69	48	21	69.6	30.4
1946	69	48	21	69.6	30.4
1947	77	56	21	72.7	27.3
Totals					
1924-29	32	32	-	100.0	-
1930-47	1,089	796	293	73.1	26.9
1931-47	1,057	767	290	72.6	27.4
1924-47	1,121	828	293	73.9	26.1
1944-47	284	200	84	70.4	29.6

Source: Du Pont's Answer to Interrogatory No. 2 and Compilation by American Viscose Corporation submitted February 1, 1950. (GX394+410) 050170-1

710. 7108

GOV'T EXHIBIT NO. 539
Civil Action 1216

TABLE 12

ANNUAL PRODUCTION AND IMPORTS OF CELLOPHANE IN POUNDS

YEAR	PRODUCTION[1]	IMPORTS[2]	IMPORTS AND PRODUCTION	PERCENT IMPORTS IS OF PRODUCTION AND IMPORTS
1930	14,804,941	202,944	15,007,885	1.35
1931	28,371,139	39,835	28,410,974	.14
1932	34,040,776	19,418	34,060,194	Less than 1/10 of 1%
1933	42,328,650	75,381	42,404,031	.18
1934	50,570,404	32,117	50,602,521	Less than 1/10 of 1%
1935	57,595,980	270,842	57,866,822	.47
1936	75,593,435	194,077	75,787,512	.26
1937	81,712,352	148,831	81,861,183	.18
1938	82,677,654	46,099	82,723,753	Less than 1/10 of 1%
1939	100,008,082	71,451	100,079,533	Less than 1/10 of 1%
1940	110,819,351	21,938	110,841,289	Less than 1/10 of 1%
1941	140,701,208	36,339	140,737,547	Less than 1/10 of 1%
1942	117,597,859	62	117,597,921	Less than 1/10 of 1%
1943	127,731,012	5	127,731,017	Less than 1/10 of 1%
1944	123,589,702	76	123,589,778	Less than 1/10 of 1%
1945	127,014,028	222	127,014,250	Less than 1/10 of 1%
1946	142,702,242	11,978	142,714,220	Less than 1/10 of 1%
1947	174,549,166	7,141	174,556,307	Less than 1/10 of 1%
Totals				
1930-47	1,632,407,981	1,178,756	1,633,586,737	Less than 1/10 of 1%
1944-47	567,855,138	19,417	567,874,555	Less than 1/10 of 1%

1/ Du Pont's Answer to Interrogatory No. 1 and Compilation by American Viscose Corporation Submitted February 1, 1950. Figures for Sylvania not available for 1930 and not therefore included for that year.

2/ United States Department of Commerce, Bureau of Census, Foreign Commerce and Navigation of the United States. Consists of sheets, bands, and strips of transparent cellulose film exceeding 1 inch in width, but not exceeding 3/1000 inch in thickness, made from cellulose, except cellulose acetate. General imports from 1930 through 1933 and imports for consumption from 1934 through 1947 as contained in Government Exhibits No. 182 and 182-A.

GOVT EXHIBIT NO. 548
Civil Action 1216

ABLE NO. 13

PERCENTAGE OF DU PONT'S TOTAL SALES TO THE IMPORTANT INDUSTRY CLASSIFICATIONS

Source Material	GX 491 p.6523	GX 491 p.6523	GX 492 p.6564	GX 494 p.6619	GX 494 p.6619	GX 495 p.6663	GX 495A p.6701	GX 496 p.6768	GX 497 p.6802	GX 498 p.6829	GX 499 p.6859	GX 500 p.6890	GX 501 p.6920
CLASSIFICATION	1935*	1936*	1937*	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
Cigarettes	21.13	19.56	18.40	17.8	16.2	14.99	13.73	15.6	15.79	14.29	12.56	14.26	15.40
Baked Goods	19.50	21.86	23.49	21.6	23.3	23.53	22.39	22.4	20.47	16.48	17.38	19.07	19.27
Sub-Total	40.63	41.42	41.89	39.4	39.5	38.52	36.12	38.0	36.26	30.77	29.94	33.33	34.67
Converters	21.78	21.12	20.93	22.5	22.2	23.34	24.22	25.7	32.11	42.36	43.77	33.09	33.35
Agents	11.66	12.05	11.30	10.3	10.0	10.32	11.30	9.3	8.01	5.84	5.29	7.30	4.73
Fabricators and Industrial Users	1.79	2.13	2.40	2.8	3.5	3.99	4.98	2.6	2.84	5.32	5.07	5.73	6.10
Jobbers	.16	.57	.88	1.1	1.3	1.67	1.51	1.0	1.05	.70	.66	.80	.92
Sub-Total	35.39	35.87	35.51	36.7	37.0	39.32	42.01	38.6	44.01	54.22	54.79	46.92	45.10
Total Percentage	76.02	77.29	77.40	76.1	76.5	77.84	78.13	76.6	80.27	84.99	84.73	80.25	79.77
DU PONT'S YEARLY TOTAL PRODUCTION°	43,807M	55,593M	61,021M	61,386M	74,147M	81,676M	106,349M	87,099M	97,651M	94,350M	96,401M	107,185M	133,502M
Total Promotional Converter Sales		8,813M+		11,734M#	13,648M#	15,755M+	12,828ML			27,201MT			
Total Converter Sales x	9,163M	11,124M	12,183M	13,808M	16,354M	19,060M	25,377M	22,482M	31,175M	39,809M	41,840M	35,203M	44,008M

* Estimated percentages, from source material
° Taken from GX 393
+ Taken from GX 5047, p. 4568
# Taken from GX 494
T Taken from GX 5531
L Taken from GX 5023
x Includes Promotional Converter sales, Regular Converter sales, and 100% Converter (those who purchase all from du Pont but are not listed as Promotional Converters) sales.

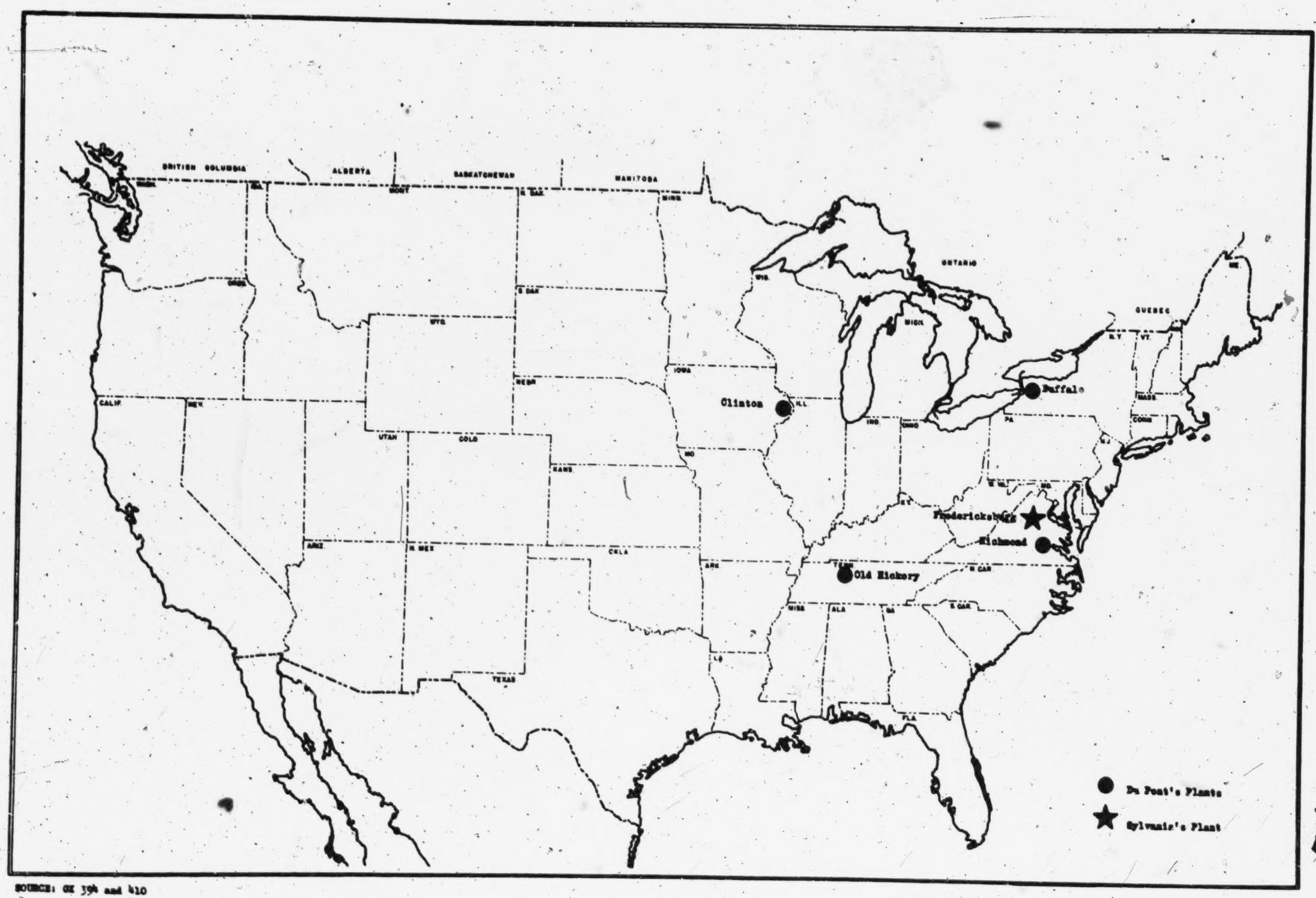
7127

7127 3872

GOV'T EXHIBIT NO. 552

1216

LOCATION OF CELLOPHANE PLANTS IN THE UNITED STATES IN 1947



SOURCE: GX 394 and 410

7169

7169

3873

2909

cc - Allen Abrams
Roy Sund
Russ Flom
Fred Deutsch
Chas. Wagner

December 31, 1940

Mr. E. C. Lake,
Assistant Director of Sales,
"Cellophane" Division
E. I. duPont deNemours & Company
Wilmington, Delaware

Dear Mr. Lake:

I am attaching hereto sample wrappers of Parakote-Cellophane which are identical to our processed cheese wrapper but designed for packaging ground and processed meats, such as the various sandwich loaves you see on the market today. The finished package would be produced on the same type of machinery equipment now used for the packaging of processed cheese.

We have experimented extensively with both moisture-proof-one-side Cellophane and P. T. Cellophane, and find that the operation and in the slicing operation in the retail market. As you know, Parafilm adheres better to P. T. Cellophane than to M.S.D.T. Cellophane, and the general all around results are more satisfactory.

The attached samples are taken from the first order we have produced of this material, which, as you can see is for the Oscar Mayer Company, Madison, Wisconsin. We appreciate the fact that coating, as per these samples, on P. T. Cellophane is not covered by our agreement with you; however, it being a small order and in the nature of an experiment, we hope you may have no serious objection.

Our main purpose in writing you in regard to this package is to approach you on the question of extending our license agreement on the use of P. T. Cellophane coated with Parafilm to include this product, - namely, wrappers for meat packaging.

As you perhaps know, the Pliofilm people have played with this idea too and have done some packaging and are doing some at present. In certain respects, Pliofilm is all right, but we believe Parakote-Cellophane has qualities which will prove superior to Pliofilm.

Will you please be so kind as to let me hear from you on this at your earliest convenience.

Yours very truly,

LEC-G
Encs.

Mar 11-44

GOVT EXHIBIT NO. 2912
Civil Action 121

E. I. DU PONT DE NEMOURS & COMPANY (INC.)

Manufacturers of

"CELLOPHANE" DIVISION — Cellophane — WILMINGTON, DELAWARE

February 10, 1941

Mr. Leo E. Croy, Vice President,
MENASHA PRODUCTS COMPANY,
Menasha, Wisconsin.

Dear Mr. Croy:

Referring to yours of January 29, I regret very much the delay involved in answering the question raised in your letter of December 31 but, as it involves matters of broad importance, with ramifications in several other directions, it could only be decided after very careful exploration by our Management and our Legal Department.

After very careful consideration, our Management believes it unwise to extend at this time the licensing arrangement between du Pont and Marathon Paper Mills Company to the use of your "Parakote" coating applied to P.T. "Cellophane" in the meat industry.

However, perhaps it would be possible for you to accomplish your objective by other means.

We will be glad, of course, to have you use any of our moistureproof films, coated on both sides or one side, for any purpose in any industry; assuming, of course, that such use does not involve infringement of a patent, which we do not anticipate.

Would it not be possible to develop an entirely satisfactory wrapping material by using one of our moistureproof films, with an attendant reduction in volume of "Parakote" applied thereto, thus reducing your cost - and also the cost to the consumer - by materially increasing the area per pound of film? Perhaps by this means you could produce a finished product of equal quality and cost.

If you experience any difficulty in the operation of our moistureproof films, we are quite certain that our technical people can work out the problem, which we will be very glad to arrange for if you find it necessary.

We regret very much that we cannot accede to your request and hope you can appreciate our position. It is our opinion that we can arrive at the same goal through close collaboration along the lines mentioned above.

Will you kindly give the matter consideration in this light and let us hear further from you.

Very truly yours,

E. C. Lake

DU PONT E. C. Lake,
Asst. Director of Sales.

Mar 47.

ECL MdM

BETTER THINGS for BETTER LIVING THROUGH CHEMISTRY

2209

TABLE 1

ANNUAL PRODUCTION OF CELLOPHANE BY COMPANY

GOV'T EXHIBIT NO. 531a
Civil Action 1216

YEAR	INDUSTRY TOTAL (Pounds)	DU PONT (Pounds)	SYLVANIA	PERCENT OF TOTAL DU PONT	PERCENT OF TOTAL SYLVANIA
1924	361,249	361,249	-	100.0	-
1925	944,441	944,441	-	100.0	-
1926	1,910,286	1,910,286	-	100.0	-
1927	1,889,599	1,889,599	-	100.0	-
1928	3,181,069	3,181,069	-	100.0	-
1929	6,056,128	6,056,128	-	100.0	-
1930	14,804,941 1/	14,804,941	1/	-	-
1931	28,371,139	24,619,988	3,751,151	86.8	13.2
1932	34,040,776	27,008,687	7,032,089	79.3	20.7
1933	42,328,650	33,962,048	8,366,602	80.2	19.8
1934	50,570,404	39,357,997	11,212,407	77.8	22.2
1935	57,595,980	43,807,451	13,788,529	76.1	23.9
1936	75,593,435	55,593,780	19,999,655	73.5	26.5
1937	81,712,352	61,021,870	20,690,482	74.7	25.3
1938	82,677,654	61,386,582	21,291,072	74.3	25.7
1939	100,008,082	74,147,443	25,860,639	74.1	25.9
1940	110,819,351	81,676,848	29,142,503	73.7	26.3
1941	140,701,208	106,349,907	34,351,301	75.6	24.4
1942	117,597,859	87,099,471	30,498,388	74.1	25.9
1943	127,731,012	97,651,419	30,079,593	76.5	23.5
1944	123,589,702	94,350,906	29,238,796	76.3	23.7
1945	127,014,028	96,401,673	30,612,355	75.9	24.1
1946	142,702,242	107,185,838	35,516,404	75.1	24.9
1947	174,549,166	133,502,858	41,046,308	76.5	23.5
1948	207,295,959	160,616,693	46,679,266	77.5	22.5
1949	228,837,235	178,666,169	50,171,066	78.1	21.9
1950	262,671,882	202,826,066	59,845,816	77.2	22.8
Totals					
1924-29	14,342,772	14,342,772	-	100.0	-
1931-47	1,617,603,040	1,225,124,766	392,478,274	75.7	24.3
1924-47	1,646,750,753	1,254,272,479	392,478,274	76.2	23.8
1944-47	567,855,138	431,441,275	136,413,863	76.0	24.0
1948-50	698,805,076	542,108,928	156,696,148	77.6	22.4

1/ Figures for Sylvania not available and not included

Source: Du Pont; 1924-1949, Government Exhibit No. 393; 1950, Defendant Exhibit No. 600.
Sylvania; 1930-48, Government Exhibit No. 410; 1949-1950, Defendant Exhibit No. 600.

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TABLE 5

ANNUAL POTENTIAL CAPACITY TO PRODUCE CELLOPHANE BY COMPANY

Civil Action 1216

YEAR	POTENTIAL CAPACITY IN THOUSANDS OF POUNDS			PERCENT OF TOTAL	
	INDUSTRY TOTAL	DU PONT	SYLVANIA	DU PONT	SYLVANIA
1924	789	789	-	100.0	-
1925	1,413	1,413	-	100.0	-
1926	2,378	2,378	-	100.0	-
1927	2,267	2,267	-	100.0	-
1928	3,181	3,181	-	100.0	-
1929	6,056	6,056	-	100.0	-
1930	16,294	15,294	1,000	93.9	6.1
1931	37,274	32,474	4,800	87.1	12.9
1932	46,070	36,770	9,300	79.8	20.2
1933	56,757	46,757	10,000	82.4	17.6
1934	71,104	58,204	12,900	81.9	18.1
1935	72,363	57,063	15,300	78.9	21.1
1936	79,914	59.914	20,000	75.0	25.0
1937	88,337	64,637	23,700	73.2	26.8
1938	102,904	76,504	26,400	74.3	25.7
1939	115,100	85,100	30,000	73.9	26.1
1940	122,350	92,350	30,000	75.5	24.5
1941	148,900	112,300	36,600	75.4	24.6
1942	135,315	98,715	36,600	73.0	27.0
1943	140,858	104,258	36,600	74.0	26.0
1944	138,330	101,730	36,600	73.5	26.5
1945	139,717	103,117	36,600	73.8	26.2
1946	152,763	116,163	36,600	76.0	24.0
1947	184,079	138,579	45,500	75.3	24.7
1948	212,673	165,673	47,000	77.9	22.1
1949	236,880	185,880	51,000	78.5	21.5
1950	268,000	204,500	63,500	76.3	23.7
Totals					
1924-29	16,084	16,084	-	100.0	
1930-47	1,848,429	1,399,929	448,500	75.7	24.3
1931-47	1,832,135	1,384,635	447,500	75.6	24.4
1924-47	1,864,513	1,416,013	448,500	75.9	24.1
1944-47	614,889	459,589	155,300	74.7	25.3
1948-50	717,553	556,053	161,500	77.5	22.5

Source: Du Pont; 1924-1949, Government Exhibit No. 394; 1950, Defendant Exhibit No. 601.
Sylvania; 1930-1949, Government Exhibit No. 410; 1950, Defendant Exhibit No. 601.

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TABLE 9

ANNUAL DOLLAR SALES OF CELLOPHANE BY COMPANY

GOV'T EXHIBIT NO. 541a
Civil Action 1216

YEAR	INDUSTRY TOTAL (Dollars)	DU PONT (Dollars)	SYLVANIA (Dollars)	PERCENT OF TOTAL DU PONT	PERCENT OF TOTAL SYLVANIA
1924	1,306,662	1,306,662	-	100.0	-
1925	1,942,373	1,942,373	-	100.0	-
1926	2,982,542	2,982,542	-	100.0	-
1927	2,869,014	2,869,014	-	100.0	-
1928	3,734,830	3,734,830	-	100.0	-
1929	6,219,620	6,219,620	-	100.0	-
1930	10,894,529 1/	10,894,529	1/	-	-
1931	16,067,807 1/	16,067,807	1/	-	-
1932	18,385,569	15,377,961	3,007,608	83.6	16.4
1933	20,542,189	16,668,110	3,874,079	81.1	18.9
1934	24,033,625	18,818,350	5,215,275	78.3	21.7
1935	24,746,964	18,708,165	6,038,799	75.6	24.4
1936	30,045,359	22,686,931	7,358,428	75.5	24.5
1937	32,734,419	25,054,831	7,679,588	76.5	23.5
1938	34,407,911	25,575,660	8,832,251	74.3	25.7
1939	39,273,358	29,339,756	9,933,602	74.7	25.3
1940	41,280,886	31,048,914	10,231,972	75.2	24.8
1941	52,803,576	39,974,571	12,829,005	75.7	24.3
1942	48,018,989	34,650,936	13,368,053	72.2	27.8
1943	51,576,041	39,234,467	12,341,574	76.1	23.9
1944	51,460,957	39,357,006	12,103,951	76.5	23.5
1945	52,124,450	39,814,334	12,310,116	76.4	23.6
1946	56,889,793	42,649,531	14,240,262	75.0	25.0
1947	71,821,545	55,339,626	16,481,919	77.1	22.9
1948	94,023,051	73,738,567	20,284,484	78.4	21.6
1949	107,721,826	85,936,478	21,785,348	79.8	20.2
1950	128,665,946	99,181,192	29,484,754	77.1	22.9
Totals					
1924-29	19,055,041	19,055,041	-	100.0	-
1932-47	650,145,631	494,299,149	155,846,482	76.0	24.0
1924-47	696,163,408	540,316,926	155,846,482	77.6	22.4
1944-47	232,296,745	177,160,497	55,136,248	76.3	23.7
1948-50	330,410,823	258,856,237	71,554,586	78.3	21.7

1/ Figures for Sylvania not available and not included.

Source: Du Pont; 1924-1949, Government Exhibit No. 395; 1950, Defendant Exhibit No. 536. Sylvania; 1930-1948, Government Exhibit No. 411; 1949-50, Defendant Exhibit No. 536.

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GOV'T EXHIBIT NO. 580
Civil Action 1216

CC: R. R. SMITH
A. P. WENDLER
T. W. HOLLAND
J. E. DEAN
H. P. BETTER

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON 98, DELAWARE

FILM DEPARTMENT

CONFIDENTIAL

August 8, 1950

MR. C. A. MALEY,
CONTROL MANAGER.

Attached is the report of our competitive position covering the first six months of 1950.

J. E. DEAN
DIRECTOR OF SALES

JED:beh
Attachment

7329

CM-664

EXHIBIT " "

FILM DEPARTMENT COMPETITIVE POSITION

FIRST SIX MONTHS 1950

Product	Estimated Volume Total Industry	Per Cent Du Pont
I. CELLOPHANE	131,000,000 Lbs.	75
II. POLYTHENE FILM (Under .005)	7,500,000 Lbs.	7
III. ACETATE FILM (Under .003)	5,300,000 Lbs.	18
IV. CELLULOSE SEALS	930,000,000 Units	64
V. SPONGES (Cellulose + Natural)	1,100,000 Lbs.	51
VI. CELLULOSE SPONGE YARN	690,000 Lbs.	100

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CM-664

[redacted]

[redacted] - FIRST SIX MONTHS 1950

I. [redacted]

	Total Sales (000 Pounds)		
	First Six Months 1949	First Six Months 1950	1950 As % of 1949
Du Pont	84,750	99,200	117
American Viscose (Est.)	25,500	32,000	125
Foreign Imports (Est.)	-	60	-
TOTAL	110,250	131,260	119
Du Pont as % of Total	77	75	

Demand continued well above the industry capacity. Both Du Pont and American Viscose were obliged to allocate production.

The foreign imports indicated above were received in the month of June. France, England and Belgium are importing through an American agent, Caillet & Hartig Co., Inc., New York City. Import volume is expected to reach approximately 350M pounds per month by the end of this year. Present price quotations on 300 moistureproof are $.52/Lb. plus $.30/Lb. import duty or a total of $.82/Lb. as compared with $.48/Lb. domestic film.

Reports are that American Viscose Corp. are about a year behind schedule in reaching their projected production of 100 million pounds per year. This volume is not now expected until the end of 1951.

Cellophane film exports from both the U. S. A. and the European countries for the first six months of 1950 are estimated to have been as follows:

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	Est'd. Export Pounds (000 Omitted)	Est'd. Per Cent of Production Exported	Per Cent Exports to Total
Du Pont	2,100	2	13
American Viscose	600	2	4
Converters, etc.	300	?	2
U. S. A.	3,000	2	18
United Kingdom	9,000	50	55
France	1,100	16	7
Belgium	550	12	4
Italy	300	7	2
All Others	1,500	10	9
EUROPE	12,560	24	76
Japan	960	50	6
	16,520	9	100

As can be seen, the United Kingdom manufacturers enjoy the major share of the export market. Du Pont's export volume is limited due to dollar shortages in most markets and the shortage of Cellophane in the domestic market. British prices are $.40 per pound on moistureproof rolls as compared with Du Pont's $.51 per pound F.A.S. exit port.

COMPETING FILMS & PAPERS

The shortage of Cellophane has created a greater demand for competitive wrapping materials, and the trade is substituting these materials wherever possible.

Rubber Hydrochloride - "Pliofilm"

Goodyear's production is estimated at 20% above 1949 or 1,000,000 pounds per month. Deliveries are from five to six weeks instead of two weeks earlier this year.

Major developments are two new film types: PM-1 for prepackaging fresh meats and HP for heavy produce bags. Both these films are designed to compete with Cellophane in self-service stores. Roll prices on comparable yields are $.044 per M square inches as compared with $.029 for Du Pont film.

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Waxed Paper, Glassine, Greaseproof and Vegetable Parchment

U. S. Dept. of Commerce reports indicate production volumes of these materials are up 17% above 1944. The industries of baking, candy, and meat are replacing Cellophane with these materials.

Vinyl Films for Packaging

Vinylidene Chloride films Saran (Dow Chemical Co.) and Cry-O-Rap (Dewey & Almy Co.) while still relatively small in overall volume are gaining acceptance in food packaging uses.

CM-664

MONTHLY SALES REPORT - FILM DEPARTMENT

SEPTEMBER - 1950

I. CELLOPHANE

September sales (preliminary) of 16.6MM pounds were 4% above September 1949 and 1% below forecast. War business amounted to about 240M pounds, an increase of 128% over August but still only 1.4% of our total.

Our sales continue to be limited by production capacity. Little change is expected in this situation during the next six months.

Trade reaction to our price increase, effective October 1, 1950, was favorable.

Imports of Cellophane are estimated to have been 160M pounds during September, an increase of 35M pounds over August and 50M pounds over July. American agents have written letters to domestic customers explaining that foreign films were now available only in non-moistureproof grades. These limitations will restrict the volume of imports considerably.

Effective September 25, 1950, Pliofilm prices were increased for the third time since June 1950. This latest revision amounted to 11¢ per pound or 10% on popular gauges. Goodyear's letter to the trade states the full effect of the recent R1 order controlling the consumption of rubber is not yet known and allocations of Pliofilm may be necessary.

Cellophane users are finding it more and more difficult to obtain competitive packaging materials such as glassine, wax papers, foil, cartons, etc. Producers are reported to be limiting sales.

II. POLYTHENE FILM

September sales (preliminary) of 175M pounds were 42% above the forecast. Total film sales continue to be limited by the amount of flake allocated to us by the Polychemicals Department. War business amounted to about 64M pounds or 36% of the total. Principal war uses are barrier laminations, electrical applications, and Ration "C" bags.

CM-533

June 9th, 1951.

MR. H. O. LADD, DIRECTOR,
TRADE ANALYSIS DIVISION.

INFORMATION ON COMPETITION FOR
EDUCATORS' CONFERENCE - JUNE 21ST

In reply to your letter of June 5th, in connection with the above matter, we are giving you below information which we hope will be helpful in describing the extent of our competition.

As you will note, we are setting this down into several main headings, that we believe are particularly significant. Because Cellophane is the predominating factor in our business, the following information is applicable to that product primarily.

Cut-Price Competition

There is no cut-price competition on transparent films in our business. Film manufacturers operate on the basis of published price lists and do not deviate from them. In normal times, viscose films are usually the same price.

Discount Competition

In the viscose field, there is no discount competition. Some other transparent films offer a quantity discount for volume purchases which competition we do not meet.

Competition From Other Materials

This is our major competition. The growth of Cellophane was primarily a growth based on competition from other and, for the most part, cheaper materials. The main competitive materials in that category against which Cellophane competes are waxed paper, glassine, greaseproof and vegetable parchment papers, all of which are lower in price than Cellophane. We do not meet this price competition. Rather, we compete with these materials on the basis of establishing the value of our own as a factor in better packaging and cheaper distribution costs and classify as our logical markets those fields where the properties of Cellophane in relationship to its price can do a better job for the user.

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Other materials against which Cellophane competes are foil and, in the field of transparent films, well established competitors are Pliofilm, Saran, Cry-O-Rap, Buna N and in addition to these there are a number of films made from polystyrene, polyvinyl alcohol and other materials which are coming into the field.

An estimate of the extent of this flexible packaging material competition may be gathered from the extent of the 1950 market. It is estimated that this market totaled 1,136,109,000 pounds in the year of 1950 and du Pont's Cellophane percentage of that market was less than 20%.

What We Do To Create Competition

There are several things which we do to create competition. By research and the ultimate production of newer films in the viscose group, we are able to enter certain markets which have been barred to us prior to the introduction of such a film. A good example of this is the wrapping of fresh meats, where after many years of development, a film was produced which would retain the natural color of meat for the necessary period of sales life. As a result of this, one of our major competitors in this field has redoubled their efforts to produce a satisfactory film and has done so, thus establishing a type of competition that heretofore had not existed.

Through market research and analysis, we have been able to penetrate markets which have been denied to us with the result that such competition has stimulated competitive papers to greater activity. A good example of this is the increased transparency of glassines over the years and the more recent development of functional properties through the coating of paper and the vast improvement in the use of high gloss inks on protective papers which permit life-like color reproductions.

The general development of the whole market for transparent films has stimulated within recent years the introduction of many new types of films, the chief ones being Good-Year's Pliofilm and Dow's Saran and, to a lesser degree, Cry-O-Rap.

The general result of these many flexible materials competing with Cellophane is to give the manufacturer of packagable products a wide choice of materials from which to choose many of which can be used interchangeably, depending upon the problem he has to solve and the particular way in which he chooses to solve it. A good example of this is the baking industry, where the principal competitor is waxed paper which the baker can use for less than half the cost of Cellophane. The greater share of this market is still enjoyed by waxed paper and we believe that there is no question but that waxed paper and papers generally, will always be cheaper than regenerated cellulose film.

In the case of competition from other transparent films, most all of those in the non-viscose group such as Pliofilm, Saran, etc., are higher in price. However, they have functional qualities which are different from Cellophane and certain advantages against which we must compete. In short, the markets for Cellophane are those markets where its functional qualities and published prices best permit it to compete and the progress in our business has been made primarily by selling the values of our film in relationship to what the user could afford to pay for them.

Number of Competitors in the Viscose Field

Up to the present time, we have had one competitor in the viscose film field, originally Sylvania Industrial Corporation and later the Sylvania Division of the American Viscose Corporation. This company operated under du Pont patents in the manufacture of moistureproof Cellophane. Very shortly a third producer, Olin Industries, will enter the field with a new plant, construction of which is practically finished. This competitor was brought into the field by du Pont to satisfy the demand for Cellophane as a result of the monopoly suit brought against du Pont by the Department of Justice, which charge the Company is vigorously protesting and defending in court. Du Pont had plans for a new plant completed when the suit was brought, but under the circumstances, it was not felt wise to risk stockholders' money while charges were pending.

MR. H. O. LADD
concluded

June 8th, 1951.

I trust the above information will be helpful to you in compiling data useful to Mr. Kinsman.

R. R. SMITH,
ASSISTANT DIRECTOR OF SALES.

RRS:Cr

CC: F. J. Zugehoer (2) - Legal

MEMO. FOR FILES (7) - December 14, 1949

SUMMARY OF CELLOPHANE PROCESS SALE NEGOTIATIONS

On March 29, 1948, the Finance Committee approved the following resolution that, subject to such approval, had been adopted by the Executive Committee on March 17:

"RESOLVED, that the Development Department in collaboration with the Rayon Department, be requested to ascertain promptly, and to report to the Executive Committee, as to the possibility of interesting one or more concerns in going into the manufacture of cellophane cellulose film, and cellulose bands, on the basis of du Pont -

1) furnishing its 'know-how' (consisting of the best commercial practice at the time of an agreement with a new producer), and licenses under its pertinent U. S. patents, for a moderate fee;

2) being willing to assist a new producer in a new plant project, on a moderate fee basis, as consultant, design contractor, sub-contractor, or general contractor.

with the understanding that no commitments will be made without prior approval of the Executive and Finance Committees."

The performance of this assignment to the Development Department was undertaken by E. K. Gladding, H. E. Ford, and J. L. Fahs.

The initial approach was to Tennessee Eastman, whom Mr. Gladding telephoned on March 31. After being put off from time to time, Mr. Gladding was finally told on April 23, by Mr. Thomas J. Hargrave, President of Eastman Kodak Co., that Eastman had no interest in the subject.

Meanwhile, some members of the Executive Committee had mentioned the cellophane opportunity to a few outside business men. One of the men so informed was Mr. Charles F. Benzel, of the Rockland Corporation, Wilmington, Delaware. Mr. Benzel undertook, as a personal interest, to try to

interest some of his connections in entering the cellophane business. Consequently, the following concerns gave more or less consideration to the offer, but finally declined: (Date references are those of significant letters or memoranda in Development Department file 675-L).

Rockefeller Brothers (Apr. 8 & 7, 1948)
Koppers Co. (Apr. 30, May 12, 1948)
Meade Paper Co. - per Drexel & Co. (May 5 & June 4, 1948)
Scott Paper Co. - per Drexel & Co. (May 5 & June 4, 1948)

Through action initiated by du Pont representatives, the cellophane opportunity was brought to the attention of the following concerns without developping more than passing interest:

Air Reduction Co. (Apr. 14, 19, & 23, 1948)
Freeport Sulfur Co. (May 14 & June 9, 1948)
Visking Corp. (June 4 & 29, 1948)
Allied Chemical Co., General Chemicals Div. (Aug. 27, Sept. 9, Oct. 15, 1948)
Kalamazoo Vegetable Parchment Co. (8/26, 9/1, 9/3, 10/1/48)
Phillips Chemical Co. (8/27, 9/14, 11/5, 12/1/48)
Crown-Zellerbach Co. (9/13, 9/29, 10/4, 11/5/48; 1/21, 2/25/49)

After a little experience with the type and scope of introductory information desired by most prospects, a memorandum of "Preliminary Information" (copies appended hereto) was prepared. A copy was generally submitted to the prospect as soon as appropriate interest was evidenced.

Du Pont representatives also initiated discussions with Goodyear Tire and Rubber Co., the producer of Pliofilm. For a time, Goodyear showed an active interest, but after obtaining considerable information, Goodyear was heard from no more. (10/20, 11/2, 11/23/48; 1/13, 1/18/49).

Meanwhile, W. R. Grace & Co. and Olin Industries, Inc. had started their respective major investigations. (See report S-2774, December 28, 1948). Due to the field activities of Grace and Olin, as well as the news spread by those approached directly by du Pont, several inquiries were received without any substantial consequence, as follows:

Mr. Rene Bernheim (Elam Manufacturing Co.) 6/3/48.
Mr. S. E. Seaman (Snia Viscosa) 7/20, 7/27, 8/10/48.
Equitable Securities Co. & Nashville Coal Co.: 6/7, 6/22, 7/12, 9/24, 9/27/48; 11/14, 11/29/49.
Mr. L. A. Bierly: 7/26, 9/17/48.
North American Rayon - American Bemberg: 8/16, 8/17/48.
Pullman Co. : 8/27/48.
Mr. L. S. Fryer: 10/6/48.
Day & Zimmerman, Inc., re. Firestone Tire Co. and Reynolds Metals Co.: 11/2/48.
Shellmar Products Corp.: 12/14/48.
West Virginia Pulp and Paper Co.: 3/1/49.
Celon Co.: 3/21/49.

On January 10, 1949, the Wall Street Journal published an article on du Pont's efforts to obtain additional competition in the cellophane business. This article was widely quoted in other newspapers throughout the country. Du Pont subsequently received inquiries from over a hundred different parties, most of whom showed no further interest after being informed of the magnitude of the investment required.

An outstanding exception was Abitibi Power & Paper Company. After receiving the usual preliminary information, Abitibi engaged a firm of consulting engineers (George S. Armstrong & Co.) to investigate the subject, and indicated a strong interest. However, no action was taken by Abitibi after receiving the engineers' report, which concluded that the opportunity was attractive. (1/17, 1/21, 1/24, 2/9, 2/24, 3/2, 4/4/49).

Johns-Manville Corporation presented itself as a prospect in August, 1949, "if present negotiations are not consummated." As negotiations with Olin Industries were consummated in November, no discussion was ever held with Johns-Manville. (8/9, 8/19/49).

Among the inquiries resulting from the publicity attending du Pont's efforts were a few regarding foreign manufacture. The replies to such inquiries embodied a paragraph substantially as follows:

> "At the present time, du Pont is primarily interested in the additional production of cellophane in the continental United States. Du Pont

will not be in position to offer any technical assistance with respect to cellophane manufacture elsewhere until the domestic situation is settled. However, if you are interested in a bare patent license and will specify the patents involved, you may direct your inquiry to the undersigned."

The following inquiries were so handled by the Development Department:

Stanvik & Co. ("abroad") 1/5, 1/25/49.
C. A. Gannon (Puerto Rico) 1/17, 1/21/49.
Robert Ackerschott (Europe") 1/21, 1/25/49.
Kerby, Dahlstrand Inc.(Sweden) 1/21, 1/24/49.
Nandlal Parekh (India) 3/24, 4/1/49.
Papelera Guipuzcoana de Zicunaga (Spain) 5/8, 5/19/49.
Alfredo Maioli (Italy) 6/27, 8/4/49 - File 675.

Foreign Relations Department similarly replied (4/29/49) to an inquiry (4/8/49) from Travancore Rayons Ltd.

JLF

J. L. Fahs
DEVELOPMENT DEPARTMENT

VLF:MM

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CM-16a

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September 28, 1948

Cellophane - Preliminary Information

Opportunity

To help to meet the U. S. need for more cellophane, and to reduce the hazard of being judged to have a monopoly of the U. S. cellophane business, du Pont is interested in having a new competitor established on a substantial scale. Accordingly, du Pont offers:

1) To furnish its "know-how" (consisting of the best commercial practice at the time of an agreement with a new producer), and licenses under its pertinent U. S. patents, for a moderate fee.

2) To assist a new producer in a new plant project, on a moderate fee basis, as consultant, design contractor, sub-contractor, or general contractor.

(The same offer also applies to cellulose bands.)

To any capable concern that, on the basis of the following preliminary information, is seriously interested in the opportunity, du Pont will give all reasonable assistance in a detailed study of the matter.

CM-1 (X

Market

From its own market surveys, du Pont estimates that there is a potential market for approximately 500 million pounds of transparent wrapping material per year, in the following major categories:

	Millions of pounds per year
Tobacco products	33
Bakery products	176
Other foods	214
Textiles and hosiery	12
Soap, drugs, and miscellaneous	21
Industrial uses, fabricated articles, etc.	21
Export	20
Total	497

During the war, the expansion of cellophane business was not possible. Based upon prewar and postwar trends, and upon du Pont's knowledge of the consuming industries, du Pont has forecast that the following quantities of cellophane could be sold, if available:

Year	Millions of pounds
1948	240
1949	270
1950	300
1951	320
1952	340

The geographic distribution of present du Pont shipments of cellophane is indicated on the attached map.

CM-116

Supply

The 1947 production and the projected U. S. production capacity are as follows:

Producer	1947 Prod.	Projected Cap.
	(millions of pounds per year)	
du Pont	132.	190
American Viscose	38.6	75*
Total	170.6	265

There is not believed to be any prospect of imports to supply the U. S. market. Foreign producers generally have not kept up with American developments, and the present tariff is 45% (paragraph 31c).

Compared with the market forecast, the projected capacity will be deficient by 55 million pounds in 1951, and by 75 million pounds in 1952.

*From "Daily News Record," May 5, 1948.

Economics

A cellophane plant is characterized by the number of film casting machines it embodies. The production capacity per casting machine varies according to the kinds of cellophane made, but should average at least 4 million pounds a year.

Du Pont's present thinking, consistent with its past practice, is that it would not install less than 8 machines or more than 16 machines in a plant. Within that range, the economics favor the largest plant for which funds and markets are available.

The following order-of-magnitude estimates have been made, based upon assumptions that du Pont considers reasonable:

Number of casting machines in plant	8	16
Annual production, millions of pounds	33.7	67.5
	(000 omitted)	
Investment in plant*	$18,500	$30,000
Working capital	3,100	6,000
Total investment	$21,600	$36,000
Net sales (48.6¢/lb. av.)	$16,400	$32,800
Mill cost	$11,200	$21,100
Freight & delivery	180	360
Selling & administrative expense	620	840
Total cost	$12,000	$22,300
Operative earnings	$ 4,400	$10,500
Federal income tax (38%)	1,670	4,000
Net earnings	$ 2,730	$ 6,500
Net return on investment	12.6%	18%

*Based upon purchased steam and electricity, but including all fees to du Pont.

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General information

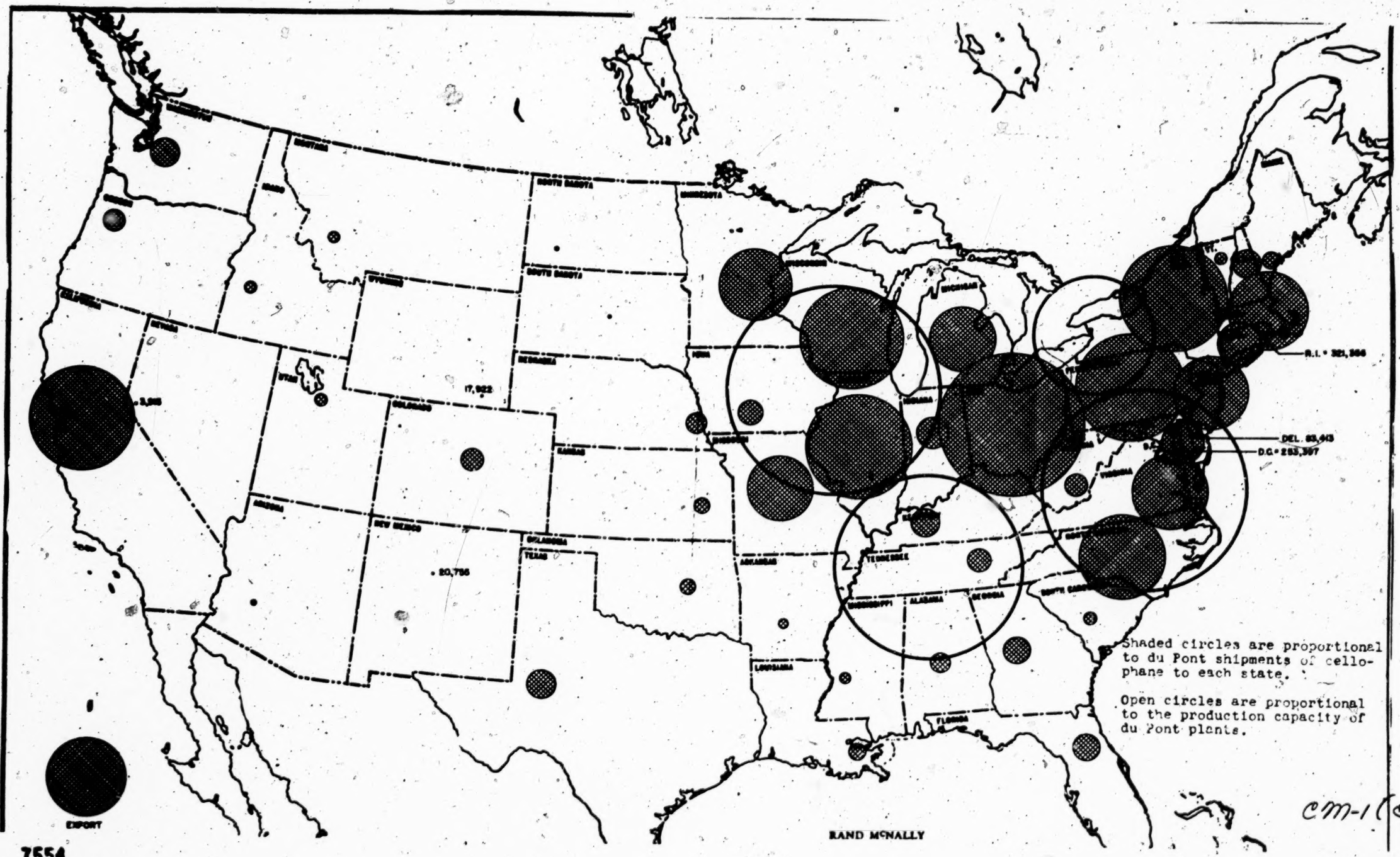
The plant operating organization would comprise approximately the following personnel:

No. of machines in plant	8	16
	(number of employees)	
Salary roll	130	171
Mfg. & service: male	280	566
" " " : female	25	37
Maintenance & engineering	85	136
Total	520	910

B. It is indicated that adequate supplies of all raw materials can be made available by the time a new plant can be constructed.

C. The plant site should comprise 100 to 150 acres, with a water supply of 6,000 to 10,000 gallons per minute and with access to a river large enough to minimize the necessary treatment of waste effluent. The utilities requirements for a 16-machine plant are 6,000 KVA of electricity and 200,000 lbs./hr. of steam at 150 lbs. pressure.

GOV'T EXHIBIT NO. 594
Civil Action 1216



Shaded circles are proportional to du Pont shipments of cellophane to each state.

Open circles are proportional to the production capacity of du Pont plants.

cm-1(c)

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Cellophane. Legal - Patent

A.E. BUCHANAN, JR. A.E.B

~~W. SHACKELFORD~~

A. KINSMAN - ~~[illegible]~~

~~R.L. RICHARDS~~

MEMORANDUM

June 2, 1949.

C.K. Gladding telephoned, advising that he report with the Executive Committee at their meeting yesterday, and the decision was to turn down the Olin proposition.

CM-121 (a)

In regard to the proposal that we offer to build a plant for Grace at a fixed total cost, the Committee took no action on this pending the development of a more detailed estimate than any previously made.

Gladding said Slim Read was at the meeting and heard the discussion.

For the moment there is nothing for the Rayon Department to do further.

B.M. MAY

Copy to Messrs.
H. C. Haskell - Legal (2)
B. M. May - Rayon (2)

May 27, 1949

TO: MEMBERS OF EXECUTIVE COMMITTEE

FROM: DEVELOPMENT DEPARTMENT

The attached memorandum pertaining to the negotiations to obtain a cellophane competitor is to acquaint the members of the Executive Committee with the present status of these negotiations and to obtain advice for further action.

The Olin Industries proposal is thought to be quite unsatisfactory but it is desirable to obtain the Committee's reaction before replying. This proposal is not only costly to du Pont, but requires putting so much cellophane capacity in at one time (16 machines) that the potential production could not all be absorbed for several years; furthermore, the proposal has a dubious tax angle.

W. R. Grace & Co. is troubled by the uncertainty and amount of the present estimate, $18,000,000 plus or minus 15%, and would consider the proposition more favorably if a more reasonable figure could be submitted which would represent a maximum commitment on their part. The Engineering Department advises that it can submit such an estimate with a better understanding of the plant site conditions. These conditions are now being studied and the Engineering Department believes it could make such an estimate more realistic, in view of the construction conditions which are expected to exist over the next two or three years. The question is, will the Committee entertain submission to Grace of such a lump-sum proposal which may involve some risk to du Pont. We believe the risk would be small.

The Rayon Department has approved the attached memorandum.

E. K. Gladding

E. K. Gladding
Director

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CELLOPHANE

Recent developments indicate the desirability of reviewing the Development Department's program on interesting one or more concerns in going into the manufacture of cellophane and cellulose bands, pursuant to the Executive Committee's resolution of March 17, 1948, approved by the Finance Committee on March 29, 1948.

At the date of the previous progress report, (S-2774) December 28, 1948, explorations had been made as to the interest of 26 different parties, of whom Olin Industries, Inc. were seriously interested, and W. R. Grace & Co. were undecided. Subsequent developments have been as follows:

W. R. Grace & Co.

After extensive surveys, Grace's investigators became convinced that there will be an adequate market for the output of a new cellophane plant. They have had access to the cellophane plant and relevant financial statements of American Viscose, which have only served to increase Grace's respect for du Pont's know-how and to bolster their confidence that they can compete successfully with American Viscose. Consequently, Grace is showing signs of an upturn of interest.

Late in March, Grace applied to Metropolitan Life Insurance Company for a loan to help finance a cellophane project. Metropolitan is understood to be giving serious consideration to the application. At about the same time, Grace reopened the long suspended negotiations with du Pont on a contract covering the design, construction, and initial operation of a new cellophane plant.

The Grace negotiators press very hard for advantages for Grace that would not be considered in a normal transaction of the

kind. However, the contemplated investment is large, the prospective return is only a fair one at best, and Grace has practically no technical resources to maintain its competitive position. Under the circumstances, Grace wants protection on the magnitude of the plant investment, assurance of plant performance, and the benefit of du Pont developments until Grace can be fairly expected to keep pace technically with du Pont. It is necessary to satisfy Grace in these matters before Grace will undertake to enter the cellophane field with a new plant.

With respect to plant design and construction, a premise of discussions to date has been that Grace will reimburse du Pont for the full cost, whatever it may be, and will pay a fixed fee. Du Pont does not have a firm estimate, and the consequent uncertainty of the design and construction cost is an important deterrent to Grace's willingness to commit itself to the venture.

It has been proposed that no purchase commitments or construction be authorized until du Pont, at Grace's expense, has prepared a firm estimate. Thereupon, Grace would either cancel the contract, or authorize continuation with du Pont's agreement that half of any cost in excess of a 10% overrun would be deducted from the fixed fee. This proposal is not wholly satisfactory to Grace, and waiting for a firm estimate might mean six to eight months' further delay in assuring the cellophane consuming industry that substantial additional production is to be provided. A collateral matter that disturbs Grace is the difficulty of defining "du Pont's usual accounting procedure," according to which the costs would be determined.

The aforementioned problem will disappear, and there is a good prospect that an agreement with Grace can be reached, if du Pont will agree to construct a cellophane plant for a lump sum. Such an

approach to the problem would deviate substantially from the basis specified by the Executive Committee and would involve an element of financial risk by du Pont, so it has not been brought into the negotiations to date.

Olin Industries, Inc.

The Olin board recently (May 11) concluded that it would like to go into the manufacture of cellophane, but that it would not be prudent to borrow a large part of the money required to do so. Olin would need some sort of financing, and believes it would be desirable to raise part of the capital by the sale of preferred stock in the new cellophane company. Olin is advised that such a plan is feasible only with respect to a going plant, with records of established performance. Consequently, Olin's present interest is limited to the acquisition of du Pont's Clinton plant.

Olin recognizes that the immediate sale of the Clinton plant at its replacement value would subject du Pont to a capital gains tax and would cause du Pont to lose earnings until the Clinton plant could be replaced. As an alternative, Olin suggests that du Pont contract to exchange the Clinton plant for a new duplicate of it to be built for Olin's account. During the construction period, Olin would share in the earnings from the sales of Clinton's production. Du Pont would be free to transfer personnel from Clinton to the new plant, provided properly trained replacements were substituted.

There is a possibility that the U. S. Treasury Department would enter into a closing agreement that such an exchange of plants would not be subject to tax. Even so, as compared with the offer made to Olin by du Pont, Olin's suggested plan would reduce du Pont's net earnings (after 43% federal profits tax) by the following items:

1. Loss of net earnings from sale of Clinton production, say half of 2-years' earnings, approximately	$5,000,000
2. Net cost of training and transferring personnel, and extra expense incurred in starting up the new plant (Order of magnitude)	1,000,000
Total (Mostly incurred during the second year)	$6,000,000

The suggested plan also has intangible disadvantages to both parties. Du Pont would have problems of employee relations, customer relations, public relations, and possibly stockholder relations. Olin would also have employee relations problems, and would fail to gain the best possible competitive position in plant location and manufacturing process.

The Olin representatives, in their visit to Wilmington on May 12, said that there is hardly a chance that the Olin board would approve, in the near future, a simple new-plant proposal along the lines of du Pont's offer.

Abitibi Power & Paper Company

Abitibi had a firm of consulting engineers (George S. Armstrong & Company) investigate du Pont's offer, starting in February, 1949. The investigation was particularly directed toward establishing a cellophane plant on the U. S. side of the Sault, across from an Abitibi pulp mill. The report to Abitibi concluded that the cellophane business was attractive, but that an initial plant should embody only four machines. Armstrong believed that a relatively low initial return should be acceptable during the period of building up sales and acquiring experience in all aspects of the business.

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Armstrong's report was submitted to Abitibi early in April, 1949. Nothing more has been heard on the matter except an informal statement, on May 10, that Abitibi is considering the report.

Discussion of status and program

Du Pont has authorized a cellophane production capacity of 194 million pounds a year. It is reasonable to assume that there will be further increments up to a capacity of approximately 200 million pounds a year. American Viscose has announced its intention of expanding to a capacity of 100 million pounds a year. Others are of the opinion that American Viscose may not reach that much capacity, and probably will not expand beyond it. Therefore, until additional capacity is built, the outlook is for a total U. S. production capacity of not more than 300 million pounds a year, of which du Pont will have at least 67%.

It is still believed that the long-range trend of the cellophane market is toward a potential of 500 million pounds or more a year. The estimated potential market for cellophane takes into account the prospective growth of uses of films of polythene and other materials. Grace and Olin, who have made independent market studies, concur with the belief that additional cellophane capacity can be kept busy.

Accordingly, there is no qualitative change in the basic considerations that led to the adoption of the resolution of March 17, 1948, on cellophane expansion. However, from the subsequent efforts of the Development Department, it is apparent that Grace is the only prospect in sight that may be interested in proceeding as contemplated by du Pont. The Olin proposition may be another means of diluting du Pont's competitive position, with additional complications and

with additional penalties to du Pont. Even if Abitibi should propose to enter the business, a four-machine operation is not likely to be adequate to accomplish the purpose of providing ample supplies of cellophane.

Neither the Legal Department, the Rayon Department, nor the Development Department is willing to sponsor Olin's proposal involving disposition of the Clinton plant, with a large financial sacrifice and with colla eral disadvantages previously mentioned. Unless the Executive Committee suggests otherwise, the Develop m nt Department proposes to advise Olin that du Pont has no present interest in that proposal.

With respect to Grace, the Development Department plans to continue its efforts to persuade Grace to accept terms that will not entail risk of loss by du Pont on transactions under the agreement. Such efforts will be difficult, and there is no better than an even chance of success.

Time can certainly be saved and the prospect of reaching an agreement can be brightened by offering to design and construct a cellophane plant for a price guaranteed not to exceed a specified amount. Obviously, before a price could be set, the site and scope of the work would have to be determined. However, in view of du Pont's experience in cellophane plant construction, and with the construction cost index no longer rising, it should not be necessary to go extensively into detailed design to arrive at a figure on which du Pont could rely with little risk of loss. That risk may be a fair one to take for the possible, even though uncertain, protection to du Pont's investment in cellophane manufacture. The Engineering Department is in the process of reviewing its estimate, as to both magnitude and reliability. If the present contract negotiations become stalemated,

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and if the Executive Committee does not object, the Development Department will explore the possibility of agreement with a new cellophane producer on the basis of a lump-sum construction contract.

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DEVELOPMENT DEPARTMENT

Copy to Messrs:
B. M. May, Rayon Dept.
H. C. Haskell, Legal Dept.

675-4-B-

January 31, 1949

MEMORANDUM

IN TURN

FROM: H. E. FORD

CELLOPHANE
OLIN INDUSTRIES, INC.

I telephoned Mr. Fred Olsen, of Olin Industries, Inc. in New York late Friday, January 28, to report the results of my investigation of the willingness of du Pont to take a second mortgage or guarantee a mortgage on Olin's proposed cellophane plant. I passed on the opinion of the Legal Department that any financial participation, either as second mortgagee, or as guarantor of a mortgage, would prevent us fulfilling our principal objective of establishing a wholly independent competitor.

I further stated that the question had been informally discussed wi h several members of our Executive Committee. No member of the Committee, with whom the matter was discussed, was in favor of granting a loan, but all agreed that the question was of too great importance to decide without formal consideration and action by the whole Committee. Consequently Olin was requested to submit the matter for formal action if it wanted to explore the subject further.

Mr. Olsen was told that we had no objection to Olin disclosing our name and the nature of the project Olin was considering when talking to bankers and insurance companies. Also that we were ready to confirm to potential lenders the type of contract being considered and furnish any information we could to assist them in considering a loan to Olin.

Hen[illegible] E. Ford

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GOV'T EXHIBIT NO. 566
Civ. Action 1216

INTRODUCTION

The purpose of this report is to present to you in brief outline form the evidence in support of entry by Olin Industries into the Cellophane business, based on the purchase of patent license and "know-how" from du Pont.

December 15, 1948

DU PONT'S PROPOSITION

Recently the du Pont organization has been cited by the United States Department of Justice as having a potential monopoly on the United States Cellophane business. Therefore, in order to help meet the need for more Cellophane capacity in this country and also to reduce the hazard of being judged to have a monopoly in this field, du Pont Company is interested in assisting a new competitor to become established in the Cellophane business.

Du Pont is offering to assist a potential competitor in the detailed work of engineering design, plant site location, purchasing of land, machinery procurement and the erection of a new plant for the production of Cellophane sheeting. For these various services they would expect to receive a nominal engineering and construction fee which is consistent with current commercial rates.

In addition du Pont is offering to furnish the necessary operating "know-how" consistent with the best and latest commercial practice in their plants, as well as paid up licenses under their entire Cellophane patent structure. The fee which du Pont would expect to receive for this paid up license and "know-how" would amount to $500,000 for an eight machine Cellophane plant and $10,000 for each million pounds year capacity subsequently added until the capacity reached sixteen machines or 67½ million pounds per year. Thereafter any further expansion would not require the payment of additional fees. To this end they are offering to train the prospective competitor's key personnel in their existing plants and other facilities. This training program is of such a magnitude that it will cost approximately $700,000.

Likewise, they would place at our disposal their recent analysis of potential plant sites. Thirdly, before du Pont was cited by the Justice Department they were planning the erection of an additional Cellophane plant. They investigated 94 potential plant sites and finally selected the area along the Miami River in the general vicinity of Fernald, Ohio, which is about 15 miles Northwest of Cincinnati, Ohio. This site not only meets the general technical requirements for a good plant location, but it is strategically located with respect to the Cellophane consuming market and is ideally situated to compete with the already existing Cellophane plants on the basis of freight equalization.

The attached map of the United States shows the area which accounts for 67% of all Cellophane consumed. It also shows the location of the proposed plant site with relation to the existing Cellophane plants of du Pont and American Viscose Company.

SUMMARY OF CELLOPHANE MARKET POSITION

Based on a more careful detailed analysis of the consuming industries du Pont has estimated that if Cellophane were freely available the sales would be as shown in the following table for 1948 through 1951 without further development of the market. For comparison there is also shown in this table the expected plant capacities for the existing producers over the same period.

Year	Forecast of Total Sales	Expected Capacity du Pont & Sylvania	Available to 3rd Producer
	In Millions of Pounds		
1948	240	205	35
1949	270	245	35
1950	300	265	35
1951	320	265	55

While the above table indicates that there is a ready market for the entire output of another eight machine Cellophane plant (33.7 million pounds per year) there is more to the picture than appears on the surface. Our position with regard to the market demand could be further secured by virtue of the fact that in all probability we could capture some fraction of Sylvania's markets on a quality basis and some of du Pont's on the basis of some consumers desire for additional sources for this material. Secondly it should be remembered that the forecasted sales are the amounts which could be sold to existing customers who would use more Cellophane if the film were freely available, but this forecast does not include the requirements for newer uses which have already been proven.

It has been estimated by du Pont that the potential market for Cellophane, i. e. those markets in which Cellophane already has some commercial application, is approximately

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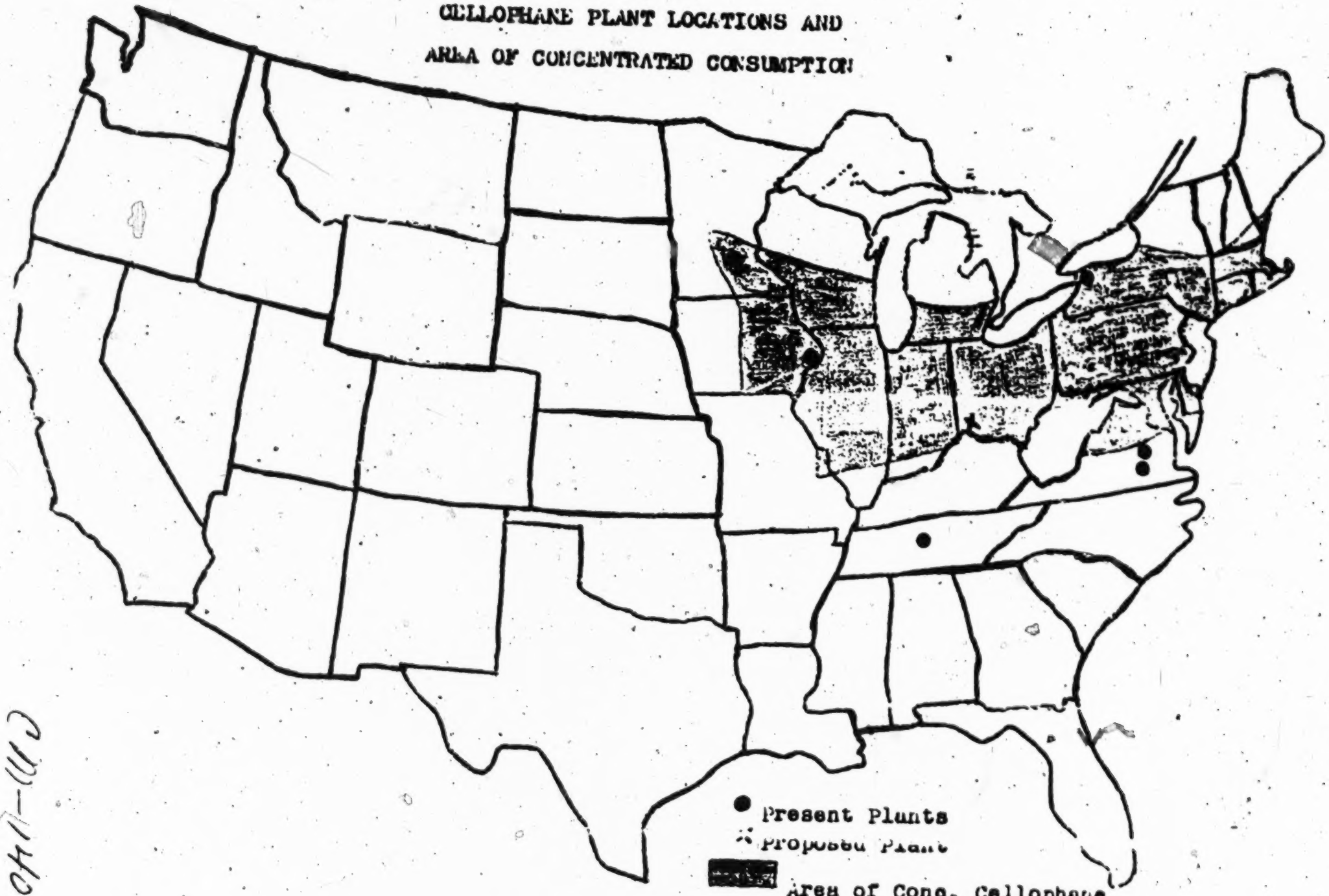
CELLOPHANE PLANT LOCATIONS AND
AREA OF CONCENTRATED CONSUMPTION



497 million pounds per year. To capture a portion of these markets it will obviously require a considerable amount of Technical Sales effort, but the fact remains that there is a substantial "cushion" between the present capacity deficiency and the potential market for this product.

The following table shows the total Cellophane industry sales of 1947 as well as the estimated market potential, by consuming industries:

Consuming Industry	Actual 1947 Sales	Estimated Market Potential
	In Millions of Pounds	
Tobacco Products	33.0	33
Bakery Products	49.7	176
Other Foods	53.4	214
Textile & Hosiery	3.4	12
Soaps, Drugs & Miscellaneous	24.2	21
Industrial Uses & Fabricators		21
Exports	6.7	20
Totals	170.4	497

The above table shows at a glance that the real future potential market for Cellophane is very closely associated with the developments in the food products industries. For example, the bread and cake bakers used 46.5 million pounds of Cellophane in 1947 and this market is expected to ultimately grow to 165 million pounds per year. The meat industry used 4.6 million pounds of Cellophane in 1947 and it is anticipated that they will finally consume about 35 million pounds annually.

The general trends of the market information furnished by du Pont are further substantiated by the previous finding of our group, in which it was predicted that the major growth of the consumption of Cellophane would be in the food and allied industries.

Several transparent films, namely Pliofilm, Polyethylene, Cellulose Acetate and certain Vinyl polymers, are currently being advertised for markets and uses now partly being met by Cellophane. According to du Pont, Cellophane is considered the only all purpose film, and any product to be truly competitive with Cellophane must have the following attributes: (1) low cost, (2) transparency, (3) operate with a high efficiency on mechanical equipment, (4) print well both as to speed and appearance.

For example, Pliofilm, which is typical, costs $0.015 per thousand square inches more than Cellophane, it is transparent but lacks the sparkle of Cellophane. Further due to the limpness, sealing difficulties and static charge, Pliofilm functions poorly on automatic wrapping equipment. In addition it is more difficult to print than Cellophane.

There are no films currently marketed which are potentially competitive to any substantial degree in Cellophane's major markets when measured by the above attributes necessary for wide usage. Other transparent films will find their place for those low volume uses which can absorb the additional cost of the film and which necessitate certain physical properties not possessed by Cellophane.

ECONOMICS

The capacity of a Cellophane plant is in general determined by the number of casting machines it contains. Casting machines are usually considered to operate in pairs because of the distribution of labor and the capacities of the subsequent processing equipment. The average nominal capacity of a Cellophane casting machine is about four million pounds of film per year.

Du Pont does not recommend entering the business with less than eight casting machines, because the efficiency in the use of labor is materially reduced and the fixed charges per pound of finished product becomes excessive. On the other hand they suggest that the plant should not be much larger than sixteen machines, because operating advantages can usually be gained in the form of better labor control and cheapor distribution of the product if any expansion beyond sixteen machines is made in the form of a separate plant at a different location.

Our consideration of the erection and operation of a four machine Cellophane plant has many drawbacks, but one of the outstanding disadvantages is that the Mill Cost of the product thus produced would be about 3 cents per pound higher than the product made in an eight machine plant. While on the other hand, the product from a sixteen machine plant would have a Mill Cost which was about 2 cents per pound lower than that produced in an eight machine plant.

The following estimated Profit and Loss Summary gives an indication of the order of the return one might expect from the operation of a 4, 8, and 16 machine Cellophane plant. It is obvious that the 4.7% return from a four machine plant hardly justifies the capital risk and the trouble of managing a business of that magnitude. More important to us at this moment perhaps is the statement by the du Pont representatives that the output of the four machine plant is so small that it could hardly be considered any competition and, therefore, is not in keeping with the spirit of their desire to assist in the establishment of vigorous competition in the Cellophane business.

ESTIMATED PROFIT AND LOSS STATEMENT

Number of Casting Machines	4	8	16
Annual Production (pounds)	16,883,500	33,767,000	67,500,000
Net Sales	$ 8,215,500	$16,431,788	$32,800,000
Total Mill Cost	6,463,500	11,495,877	21,460,000
Selling and Adm.	644,200	644,200	840,000
Total Cost	$ 7,107,700	$12,140,077	$22,300,000
Operative Earnings	$ 1,107,800	$ 4,291,691	$10,500,000
Federal Income Taxes	421,000	1,630,843	4,000,000
Net Earnings	$ 686,800	$ 2,660,848	$ 6,500,000
Investment			
Permanent	$13,000,000	$18,500,000	$30,000,000
Working Capital	1,579,500	2,940,300	6,000,000
Total	$14,579,500	$21,440,300	$36,000,000
Net Return on Investment	4.7%	12.4%	18.0%

The following table gives further detail with regard to the estimated capital investment for the eight machine Cellophane plant. It will be noted that over 60% of the investment is in the form of equipment which can obviously be depreciated more rapidly than the 20% invested in buildings.

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	Buildings	Equipment	Total
Dope Preparation	$ 735,730	$ 1,908,896	$ 2,644,626
Film Extrusion	709,930	4,016,726	4,726,656
Coating & Recovery	413,810	2,173,395	2,587,205
Slitting & Finishing	787,174	775,021	1,562,195
Storage Facilities	359,375	911,642	1,271,017
General Service Facilities	1,326,659	3,756,642	5,083,301
Construction Cost	$4,332,678	$13,542,322	$17,875,000
Land			125,000
Paid-Up Licenses			500,000
			$18,500,000

Does not include Eng fee.

Working Capital

Cash	$1,003,349
Acc'ts. Rec.	1,369,314
Semi-Fin. Prod.	241,509
Finished Prod.	233,659
Raw Mat'ls. Supp.	578,054
Less: Acc'ts. Payable	485,585
	2,940,500
GRAND TOTAL	$21,440,500

TIME TABLE OF EXPENDITURES

This proposal is based on the recommendation that an eight machine plant represents the more desirable size to be considered at this time. The following table shows in a rather condensed form that if this program is started in January, 1940, we could expect that the first casting machine would be put into operation in December of 1940 and that all construction work would be completed by June, 19[illegible] the plant would be up to full product[illegible]

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The table further suggests an approximate schedule of the appropriations necessary to progress the project in a satisfactory manner. The initial appropriation of $275,000 would be necessary for the preliminary work on selecting the plant site, obtaining options on the land, making necessary soil tests, and finally purchasing the plant site. The $7,250,000 appropriation scheduled for March, 1949 is for the purpose of covering initial design and estimating work as well as the purchase of long term delivery equipment. The third appropriation to be made is scheduled for June, 1949 and amounts to $702,950 to cover the Personnel Training Program which would extend over a period beginning in June, 1949 and ending in June, 1951. This total sum for the Training Program would be deductable as an expense item from the first year of operation of the plant.

In September of 1949 an appropriation of $10,475,000 would have to be made which would cover the balance of the cost for erecting the plant. In view of the fact that the initial operations of this plant would start in December of 1950, an appropriation of $2,940,300 would have to be made in about December of 1950. This appropriation represents the amount of working capital necessary for the operation of this business; and finally an appropriation of $500,000 would have to be made at the time that the plant reached full capacity production to cover the cost of the paid up license fee due the du Pont Company.

In connection with the introduction of the working capital into the business, one column of the following table suggests a "step-wise" method which should provide sufficient capital to support the venture in a manner which is consistent with the increasing monthly capacity of the plant until it reaches full operation.

The table further indicates the expected rate at which actual expenditures would be made. For example, while according to the appropriation schedule, $18,702,950 would be appropriated by September, 1949; the actual accumulated expenditures to that date would only amount to $4,955,000. The attached graph shows the relationship of the spending rate to the periodic appropriations.

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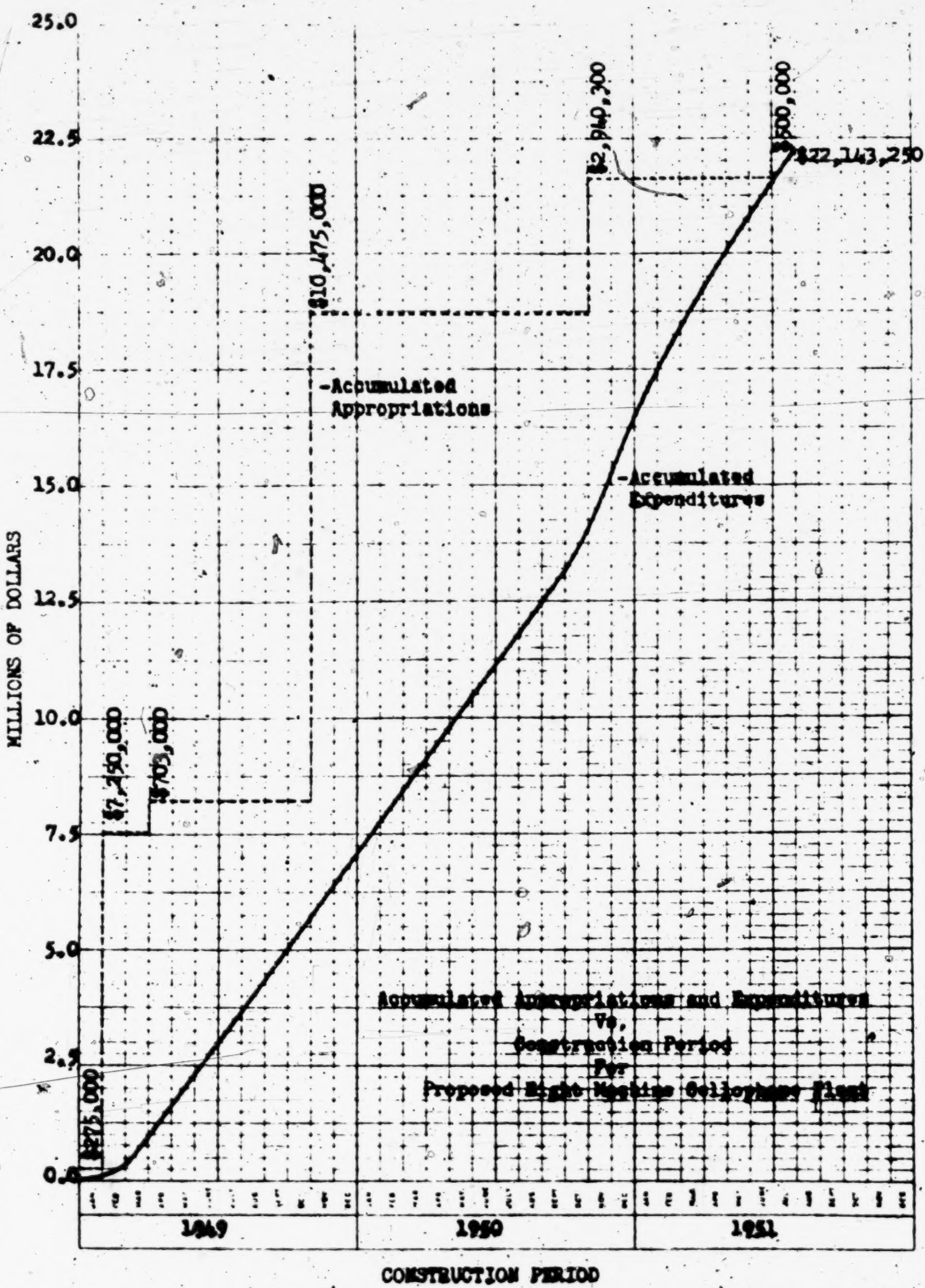
TIME TABLE OF ACTIVITIES AND EXPENDITURES

Date	Program	Appropriation	Rate of expenditures: Construction	Rate of expenditures: Training Program	Rate of expenditures: Working Capital	Total Spent each Month	Cumulated Monthly Expe.
1949							
Jan.-	Select Plant Site	$ 275,000	$ 25,000			$ 25,000	$ 25,000
Feb.-	Soil Tests, Etc.		250,000			250,000	275,000
Mar.-	Design Work	7,250,000	666,000			666,000	941,000
Apr.-	Order Equipment		666,000			666,000	1,607,000
May			666,000			666,000	2,273,000
June-	Start Training Prog.	702,950	666,000	4,620		670,620	2,943,620
July			666,000	4,620		670,620	3,614,240
Aug.-	Estimate Completed		666,000	4,620		670,620	4,284,860
Sept-	Start Constr.	10,475,000	666,000	4,620		670,620	4,955,480
Oct.-			666,000	4,620		670,620	5,626,100
Nov.-			666,000	4,620		670,620	6,296,720
Dec.-			666,000	4,620		670,620	6,967,340
1950							
Jan.-			666,000	4,620		670,620	7,637,960
Feb.-			666,000	4,620		670,620	8,308,580
Mar.-			666,000	4,620		670,620	8,979,200
Apr.-			666,000	4,620		670,620	9,649,820
May -			666,000	4,620		670,620	10,320,440
June-			666,000	29,994		695,994	11,016,434
July-			666,000	30,578		696,578	11,713,012
Aug.-			666,000	77,690		743,690	12,456,702
Sept-			666,000	77,690		743,690	13,200,392
Oct.-			666,000	149,515		815,515	14,015,907
Nov.-		2,940,300	666,000	160,257	500,000	1,326,257	15,342,164
Dec.-	Start 1st Machine		666,000	40,682	400,000	1,106,682	16,448,846
1951							
Jan.-			512,000	40,682	370,000	922,682	17,371,528
Feb.-			512,000	29,435	370,000	911,435	18,282,963
Mar.-			512,000	3,467	350,000	865,467	19,148,430
Apr.-			512,000	3,467	350,000	865,467	20,013,897
May			512,000	3,469	200,000	715,469	20,729,366
June-	Constr. Completed		513,000	584	200,000	713,584	21,442,950
July-	Full Operation	500,000	Added at this point		200,300	700,300	22,143,250
	TOTALS	$22,143,250	$18,000,000	$702,950	$2,940,300	$22,143,250	$22,143,250



25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
MILLIONS OF DOLLARS
$275,000
$7,250,000
$703,000
$10,475,000
$2,940,300
$500,000
$22,143,250
-Accumulated Appropriations
-Accumulated Expenditures
Accumulated Appropriations and Expenditures
Vs.
Construction Period
For
Proposed Eight Machine Cellophane Plant
1949
1950
1951
CONSTRUCTION PERIOD

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SUMMARY OF OPERATING COST FOR FIRST YEAR

In an effort to gauge the magnitude of the interest that might be lost in having the capital invested in a non-working form during the period of construction and initial operation, a computation was made based on accumulating the interest at the rate of 3% per year. This calculation revealed that the loss of interest would amount to $1,071,870 when figured over the period from initial construction to the "break even" point.

The following table gives an indication of the return which might be expected during the first year of operation. It is proposed that in this suggested plan of construction the first casting machine would be started up seven months before all of the construction was completed and an additional casting machine would be started up each succeeding month until all eight machines were in operation. The following summary indicates that after the first thirteen months of operation (i.e. from the time the first machine was started up) the returns would be such that the entire training program estimated at $702,950 would be paid off and it would still leave an operative earning which was in excess of the interest lost on the capital up to that point. If the loss of interest on the capital investment and the cost of the training program are deducted from the operative earnings of the first thirteen months of operation it would still leave a net earning after taxes of $108,400.

In our judgement this table represents a rather conservative approach because it was assumed that certain items in the "Overhead, Administrative and Sales" expenses would be constant whether one or eight machines were operating. This, of course, is not rigidly true, for example, it was assumed that the power and steam charge was constant for one or eight machines while in reality smaller quantities would be consumed for one machine operation, but on the other hand the effective rate per pound of steam or K. W. H. would be somewhat higher than the full plant operation.

If the steam and electric power were being furnished by an outside corporation it is logical to suppose that some very definite start-up procedure could be agreed upon with them and the basic rate so adjusted during this period that neither party would suffer unduly.

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SUMMARY OF OPERATING COSTS FOR 1ST YEAR

Date	Program	Production* Pounds	Total Income	Direct Mfg. Cost	Overhead Sales & Adm.	Total Expenses	Operative Earnings	Cumulated Earnings
1950								
Dec.	-Start 1st Casting Machine	175,880	85,582	86,250	307,490	393,740	308,158	308,158
1951								
Jan.	-Start 2nd Casting Machine	527,640	256,749	129,375	309,378	438,753	182,007	490,165
Feb.	-Start 3rd Casting Machine	879,400	427,910	215,625	311,266	526,891	98,981	589,146
Mar.	-Start 4th Casting Machine	1,231,160	599,074	301,875	313,154	614,029	15,955	605,101
Apr.	-Start 5th Casting Machine	1,582,920	770,238	388,125	315,042	703,167	67,071	538,030
May	-Start 6th Casting Machine	1,934,680	941,402	474,375	316,930	791,305	150,305	387,93[illegible]
June	-Start 7th Casting Machine	2,286,440	1,112,566	560,625	318,818	879,443	233,123	154,810
July	-Start 8th Casting Machine	2,638,200	1,283,730	646,875	320,706	967,581	316,149	161,339
Aug.	-Operate 8 Casting Machines	2,814,080	1,369,314	690,000	321,650	1,011,650	357,664	519,003
Sept.	-Operate 8 Casting Machines	2,814,080	1,369,314	690,000	321,650	1,011,650	357,664	876,667
Oct.	-Operate 8 Casting Machines	2,814,080	1,369,314	690,000	321,650	1,011,650	357,664	1,234,331
Nov.	-Operate 8 Casting Machines	2,814,080	1,369,314	690,000	321,650	1,011,650	357,664	1,591,995
Dec.	-Operate 8 Casting Machines	2,814,080	1,369,314	690,000	321,650	1,011,650	357,664	1,949,659

Operative Earnings	1,949,659
Expense of Training Program	702,950
	1,246,709
Interest on Capital Investment	1,071,870
Earnings Before Taxes	174,839
Federal Taxes (38%)	66,439
Net Earnings	108,400

* Only 50% of the production from a casting machine is counted during the month it is started up.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS:

(1) The Cellophane business is a well established large volume industry which has exceptionally good prospects for continuing its growth for many years to come.

(2) The Cellophane business has been quite resistant to depression periods. The record shows a continuing growth of volume of sales through two major depressions in the past twenty-four years.

(3) We can acquire the operating "know-how" which represents the experience and developments built up by the du Pont company over the past twenty-four years, as well as, a paid up license to operate under their entire present Cellophane patent structure for the sum of $500,000 for an eight machine plant, or $800,000 for a sixteen machine plant.

(4) An "order-of-magnitude" estimate indicates that an eight machine plant can be erected for a cost of $18,000,000 and it would require about thirty months to place all eight machines in full operation.

(5) In addition to the $18,000,000, the business would require $2,940,300 for working capital and $500,000 for licenses mentioned above, making a total investment of $21,540,300.

(6) It is estimated that a return on the investment of about 20% before Federal taxes or 12.4% after taxes could be expected on an eight machine plant. If later the plant were expanded to sixteen machines it would yield a return on the investment which is estimated to be 29% before taxes, or 18% after taxes.

(7) The principal starting up expense associated with this plant would be an intensive personnel training program amounting to approximately $700,000. It is expected that all of these expenses could be charged off against the first year's operation, as "operating expenses".

(8) If positive negotiations proceeded on this project commencing January 1, 1949, it is estimated that the first casting machine could be put into operation in December of 1950 and the entire plant could be up to capacity output by July, 1951.

(9) It is further estimated that the operations of this plant would pass the "break-even" point about December, 1951 and the expected return on the investment of 12.4% (after Federal taxes) would be realized from that time forward.

RECOMMENDATIONS

Based on the studies conducted at Wilmington, and on the recent inspection (by Messrs. J. M. Olin, S. T. Olin, B. E. Bassett, W. C. Schade, F. Olsen and M. L. Herzog) of the latest du Pont Cellophane plant at Clinton, Iowa, it is recommended that the following action be taken:

(1) Approve the project for a sixteen machine Cellophane plant with immediate construction of eight machines.

(2) Appoint a member of the Board of Directors to head the Cellophane project.

(3) Appoint a committee from the Board of Directors to determine the best means of financing construction of an eight machine plant.

(4) Approve the signing of an agreement with du Pont. A suggested form for such an agreement is at present in the hands of our Legal Department for study.

(5) Appropriate the sum of $275,000 to cover selection and purchase of plant site and initial design work associated with the construction of an eight machine plant.

M. L. Herzog J. T. Olsen

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GOVT EXHIBIT NO. 6003
Civil Action 1216

Properties of Basic Packaging Papers

The values reported in this chart were obtained from various sources and are believed to represent acceptable commercial standards. The six types included in this chart are the basic papers most commonly used in packaging. All of these papers can be coated and/or laminated to each other or to foils or films to obtain special functional and decorative qualities desired. Manufacturers and converters are listed in the Buyers' Directory and should be consulted for additional or for new uses of these materials. See also chart on *Properties of Metal Foils and Foil Laminations*, p. 234, and *Plastic Packaging Films*, p. 218.

PROPERTIES	KRAFT (SULPHATE)	GREASEPROOF	GLASSINE	VEGETABLE PARCHMENT	WET-STRENGTH[2]	BASE PAPERS[4] (For Coating or Waxing)
General						
1. Type of pulp or base stock used	Kraft (sulphate) pulp only	Hydrated sulphite or sulphate but not super calendered	Glassine is made by supercalendering greaseproof paper	High alpha cellulose from sulphite or sulphate pulp	Usually sulphate pulp, with added resins (melamine or urea)	Sulphate or sulphite or mixed pulps
2. Weight range[1]	25 to 90 lb.	20 to 50 lb.	Same as greaseproof	27 or 35 lb. Other weights available	Same as base-type paper[3]	15 to 50 lb.
3. Thickness range	Approximately 0.001 in. per 10 lb. of basic weight	Approximately 0.001 in. per 10 lb. of basic weight	Approximately 0.0008 in. per 10 lb. of basic weight	Approximately 0.001 in. per 10 lb. of basic weight[1]	Same as base-type paper[3]	Approximately 0.001 in. per 10 lb. of basic weight
4. Finish	Wet or dry machine finish; machine glazed; or super calendered	Smooth to fine grained surface matte	Characteristic very high, glossy finish	Characteristic matte finish	Same as base-type paper[3]	Varying degrees of calendering or paper machine finishes
5. Clarity and color	Opaque; natural color brown. Can be furnished, bleached or colored	Translucent to opaque; available in natural, light brown, bleached and in colors	Almost transparent to opaque. Available in natural, light brown, bleached and in colors	Translucent to opaque. Most commonly bleached. Can be furnished in colors	Same as base-type paper[3] but may complicate color matching	Semibleached to bleached (white)
Physical Test Data						
6. Bursting strength (Mullen)—lb. per sq. in.	Not less than 80% of basic weight	Fair with sulphite pulp. Good with sulphate pulp	Approximately same as greaseproof	Normally approximately 70% of basic weight on sulphites, 100% on sulphates	Dry: Somewhat better than base-type paper[3]	Not less than 60% of basic weight
7. Tearing strength (Elmendorf)	Very high	Good with sulphate pulp. Fair with sulphite	Approximately same as greaseproof	Sulphites: 60-80% of basic weight; sulphates: 100-130% of basic weight	Dry: Somewhat better than base-type paper	Fair to good
8. Folding endurance	10 double (Schopper)	Moderate. Normally brittle	Fair. Somewhat more brittle than greaseproof	Very good on special grades	Dry: Somewhat better than base-type paper	Good
9. Wet strength	Low on regular kraft	Poor on regular greaseproof	Poor	Mullen and tear: 50-60% of dry	Normally from 30 to 50% of dry values after 16 hr. immersion[3]	Low
Chemical						
10. Resistance to weak acids	Poor	Good	Moderate	Varies. Good to excellent on special grades	Fair	Fair
11. Resistance to alkalies	Poor	Poor	Poor	Varies. Good to excellent on special grades	Poor	Poor
12. Resistance to grease and oils	None	Good	Very good	Good to excellent on special grades; insoluble	Poor	None
Converting Characteristics						
13. Printability	Good, especially on well-sized bleached stock	Very good	Excellent	Very good with proper inks	Generally same as base-type paper, but may affect certain inks	Depends upon surface finish and printing process
14. Bag making	Good. Inexpensive, fast drying adhesives can be used for high-speed production	Good. Suitable for high-speed production with proper adhesives	Good. Suitable for high-speed production with proper adhesives	Requires special adhesives; relatively slow production on account of low surface penetration	Generally same as base-type paper, but may require adhesive modification	Good if coatings are heat sealable, or with proper adhesives
15. Coatings and laminations	High finish, well-sized stock preferred on account of normal high penetration	Adaptable to all types of laminations and coating	Approximately same as greaseproof, but preferred where highgloss, superior printing and maximum greaseproofness are desired	Relatively difficult to laminate or coat because of low surface penetration	Generally same as base-type paper	Surfaces are adapted for efficient formation of surface films of waxes and coatings for moistureproof uses. Degree and type of surface finish depends on coating process and functional need
16. General uses	For single and multi-ply bags used as shipping means. For single and duplex bags of all sizes. As a base for many laminations to paper and plastic film. As a base for waterproof papers using wax or asphalt as saturants or laminants. As a liner or wrapper for cartons	As bags, carton liners or wrapper not usually coated or printed. As a lamination to other paper or board	As bags, carton wrappers or liners either plain, printed, coated, or laminated. As a lamination to other papers or boards	As plain or printed carton liners, bags or as wrappers	For any application where some strength must be retained in the presence of free water	As waxed or lacquered printed opaque, or unprinted translucent wrapper for cartons or bags. As printing or coating surface of laminated paper boards

[1] Based on ream of 500 sheets, 24 in. by 36 in. Area factor (yield) $\frac{432,000}{\text{lb. per ream}}$ = sq. in. per lb.

[2] Plain kraft, glassine, or greaseproof paper can be given wet-strength characteristics by adding suitable resins to the pulp.

[3] 1% added resin will produce approximately 10 to 15% wet-strength values. 2 to 3% is normally added.

[4] Coatings in this case mean hot melts, lacquers, based resins, solutions and dispersions, but not clay coatings or sizes for printing or decorative uses.

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GLASSINE

AND

GREASEPROOF

The Wonder Papers
for Protective Packaging

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Within our generation food distribution has emerged from the so-called cracker barrel era of bulk handling to the reign of the modern market as we know it. Today most merchandise is packaged for long term protection . . . sanitarily, conveniently and at low cost and a very substantial percentage of all good things are packaged and protected by

GLASSINE and GREASEPROOF papers.

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Prologue . . .

Current magazines picture the modern age in terms of sleek, new automobiles, television, atom energy and all kinds of mechanical contrivances that are supposed to make life a sort of push-button affair. All these are indeed fascinating and they lend themselves readily to the drama of the printed page, radio, and the movies.

But there is a factor in our modern living which is less spectacular than any of these—and it is probably as important as any of them. It is—PROTECTIVE PACKAGING. It is a homely thing—undramatic—even dull. Publicity-wise it has none of the flair and glamor of, say, television! Yet—you could scrap all the television sets in the nation and life would proceed in orderly fashion. BUT!!—just eliminate PROTECTIVE PACKAGING and where would we be? Civilization would be in a fix indeed.

Time was when a family produced almost everything it needed. America was young and our population rural. Our country now has a population of one hundred and forty-eight million. Grandma no longer bakes our bread once a week and Grandpa no longer kills our pork. Instead, vast bakeries make hundreds of thousands of loaves each day. Great truck and rail systems transport this bounty to every city and hamlet. To bring these and a thousand other foods from producer to table requires *protection*—protection from becoming stale, from being contaminated . . . to keep them tasty, appetizing and good. A fabulous industry has been built up to supply this need of PROTECTIVE PACKAGING. It involves thousands of factories, thousands of technicians—chemists, physicists, craftsmen, inventors and workmen. It has become one of the great segments of American Industry.

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WHAT IS PROTECTIVE PACKAGING?

Consider this: Today a family can live indefinitely from its own kitchen shelves. It can, if need be, supply all its wants from *packaged products.* Milk, coffee, meats, vegetables, baked goods (from packaged specialties) cereals —in short, a rounded and complete diet. Not many years ago very little of all this existed. *What has accounted for the change?* . . . . It is the progress made in PROTECTIVE PACKAGING.

This booklet is written by paper people. We gratefully acknowledge our debt to the can and the jar. They have provided us with so many good things out of season—in fine condition. They continue to do so and always will.

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But it has remained for the paper industry to *extend* and *reach out* into the food domain to bring within PROTECTIVE PACKAGING technique a *thousand and one* items that never were there before. The chief contribution has been made by doing a *bang-up* job at *low cost.* Let us cite just a few examples which are near and dear to the heart of every housewife. Consider such a humble product as hot rolls. Not very long ago a housewife that could make good hot rolls was famous in her circle. She had a special skill and believe us it was a special skill. But today the greenest bride can buy in her favorite store a package of hot roll mix with a skillful blend of flour, shortening, rising material, etc. She adds an indicated amount of water and there is no place for her to go wrong. She comes home from a bridge party with only a half hour to spare before dinner. She can have guests drop in unexpectedly in mid-evening. She is always prepared and ready to make perfect rolls. And so easy, so clean and convenient.

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This is but one of hundreds of items which soften the work of Mrs. America. Studied, evaluated and mixed for her by professionals are tasty soups needing only the addition of water and heat. There are pie crust and biscuit mixes whose results could compete with the best of chefs. There are mixes for pancakes, muffins, cakes, cookies, frostings, candies and ice creams. There are superlative puddings and gelatine desserts. There are cereals, spices, teas and coffees, yeast. The list is almost endless.

Goodness, let us not forget about those "nibbling" dainties—potato chips, pretzels, salted nuts, popcorn, corn curls, corn chips. Take these away from the average American and it would be like taking away his citizenship. Their enormous growth—their *very existence* is the result of MODERN PACKAGING.

In short, the shelves of America are stocked with dozens of wonderful, tasty, nutritious food items, available for instant use and in prime condition—guarded and assured by a multi-million dollar packaging industry which is unparalleled in the whole world.

THE MATERIALS OF PROTECTIVE PACKAGING

Again, we say that we are paper people writing this message. We are not unmindful of the role played by metal foils, transparent films and various *other* papers. OURS is a message about GLASSINE and GREASEPROOF papers. Naturally we want to talk about *our* product and we figure we have a good story to tell.

Most packaging materials are available As Is. (If foil has what you need, you buy it. If cellophane is required—if your product must be seen—well and good, you buy it.)

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. . . But, let's consider GLASSINE and GREASEPROOF. What are they? What will they do? What do you expect of them? Well, here we go:

1. *They are made to your measure.*
2. *They will do just about anything you want of them.*
3. *Tell us what you need and we will make it.*
4. *Do you need* this *quality? All right, you can have it.*

   Do you want that *quality? Fine, we'll make it for you.*

THE SIGNIFICANT THING ABOUT GLASSINE AND GREASEPROOF IS THAT THEY ARE TAILOR-MADE—THEY ARE CUSTOM-BUILT TO MEET YOUR SPECIFIC NEEDS—RUN ON YOUR SPECIAL MACHINES—FILL YOUR INDIVIDUAL PACKAGING REQUIREMENTS—THERE ARE ALMOST NO LIMITS TO THE NUMBER OF GRADES AND COMBINATIONS AVAILABLE.

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WHAT ARE GLASSINE AND GREASEPROOF?

To answer this question we must talk briefly about paper. We all recognize that this is very much an age of paper. America consumes only two things in greater quantities per capita than paper. These are water and milk. Just what is paper? Well, broadly speaking, it is essentially a matted "fabric" of cellulose fibers. There are some 774 paper mills in the U. S. These mills make thousands of kinds of paper to be printed and written upon, to wrap and contain and to do a million and one indispensable jobs. But basically, most paper is the same. It has no special protective characteristics unless and until it is given *additional treatment*. Papers are coated, waxed, laminated, impregnated, lacquered, chemically treated—in other words there are

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many additives that adapt papers to uses other than to wrap, contain and keep off dust and dirt. It is with *these* processes that we are very largely concerned when we talk about PROTECTIVE PACKAGING.

GLASSINE AND GREASEPROOF, THEY ALONE ARE DIFFERENT

Of the thousands of grades made by 774 mills there are our handful of mills making papers that are definitely and INHERENTLY *different.* Why? Because they are GREASEPROOF. Offhand this may not seem too important. BUT IT IS. The layman may be inclined to think of only a few things that might present a grease problem—a few obvious things like ham or putty or lard—just a few minor and inconsequential items. Well, he is wrong. Grease problems are everywhere. For example, almost every product of our giant baking industry contains shortening in some degree. This is true of practically all of the packaged mixes which last year consumed over 400,000,000 pounds of wheat flour alone. Butter, oleo and lard are so conspicious as hardly to require mention. All meats are fatty as are fish and fowl. Chocolate, the basic flavor of our colossal confectionery industry, is very oily. Coffee, the leading American beverage, contains oils and relies primarily upon glassine to hold them. Glassine bags literally by the hundreds of millions do an all-out job of packaging and keeping crispy and crunchy thousands of tons of potato chips, popcorn, nuts and similar fried specialties — and containing their high oil content.

In summary, food is our nation's fundamental need. It has accounted for an enormous American industry. A very large percentage of all food poses a problem of containing grease, oils and fats. The food industries rely heavily upon GLASSINE and GREASEPROOF because of their totally unique

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character and because they strike the nicest balance between *performance* and *cost* that the packaging world knows.

GLASSINE AND GREASEPROOF—HOW MADE?

Here's just a sort of capsule explanation of our papers for our non-technical friends. First of all, most paper is made from wood fibers. That's the useful part of the tree. It is divorced from the rest of the log by a cooking process. Glassine and Greaseproof are made only from finer and more carefully selected pulp woods. The cooking process is something special and different. Without boring you with details, we must cook from 12 to 21 hours in very special digesters, whereas wrapping papers need only a few hours.

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BEATING

Most pulps are beaten before being run over the paper machines. Briefly, this beating process is a mechanical procedure of breaking up "bundles" of cellulose fibers much as you might break apart a piece of rope. Taking this reference to rope as a simplified means of explanation, you might think of the beating that goes on in the making of ordinary papers as consisting of breaking apart a rope into its component strands. This is good enough for most papers. But for making GLASSINE and GREASEPROOF the beating goes on and on until the strands are broken down into individual threads. Nor do we stop there. The threads are further broken up into tiny fibrillae—little gossamer-like bodies of which there are thousands (for glassine making) instead of dozens or hundreds for making more ordinary papers. This beating process, in addition to breaking down the fibers so minutely, also imparts to them a sort of watery, gelatinous quality so that when they are matted together on the paper machine to form paper they are compounded in such a close formation that there are scarcely any openings left in between them. This distinctive process called *hydra-*

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tion produces a paper so dense that it keeps grease from penetrating—hence

. . . . the ORIGINAL AND INTRINSIC QUALITY OF GLASSINE AND GREASEPROOF.

The terminology—*Glassine* and *Greaseproof* is confusing to many. Actually *Glassine* is Greaseproof paper that has been run over huge supercalenders with the result that it is smoother, denser—and STILL MORE GREASEPROOF. It will also be more transparent—if that is what is desired (some grades are purposely opaque). So—please understand that Glassine and Greaseproof are really the *same kind* of *paper*. They *both* start out as GREASEPROOF. Glassine is simply Greaseproof that has been made "even more so" by being run over the supercalenders. Lots of good paper people don't understand this.

In summary—we wind up with a product that differs markedly from all the rest of the thousands of grades of papers made in 774 mills in that it inherently possesses a most unusual and valuable characteristic—GREASEPROOFNESS. Not only is this a highly useful quality as such, but it is also useful in several other important respects. Let us consider them—

MOISTUREPROOFNESS

Essentially PROTECTIVE PACKAGING is a means of giving a product a long shelf life. It is probably true that in a majority of instances this means the control of moisture. This, in turn, means the *retention* of desired moisture *within* the package or the *exclusion* of undesirable moisture from the package. An example of the former would be the retention of moisture in a package of prunes to keep them tender. The opposite would be the protection of potato chips from atmospheric moisture so as to keep them crisp. The earliest protective packages, the jar and the can, could do both jobs very well, but at a cost which would stifle the growth of many food products. The potato chip industry is an example

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of this. In a few years it has grown from practically nothing into an industrial titan. Perhaps 90% of this product depends upon GLASSINE to keep it crisp. GLASSINE has had much to do with the growth of this industry by providing a package that was *good enough* at the *low cost* that was necessary.

HOW DOES GLASSINE DO ALL THIS?

GLASSINE is a particularly hard, dense sheet—with a somewhat glasslike surface. Moistureproofing today is accomplished by one of three major methods—*waxing*, *wax laminating*, and *lacquer coating*. Each method is a means of providing an inexpensive barrier against moisture. GLASSINE provides an almost perfect surface for the application of all three methods of moisture exclusion. Whether it be waxing, or laminating, or lacquer coating, GLASSINE provides a surface which is excellent for attaining a moisture resisting film which is UNIFORM—UNBROKEN—IMPERVIOUS. That is why half the articles on your kitchen shelves are today packaged in glassine which has been treated by one or a combination of the three methods just described.

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OTHER BENEFITS

We have said that moisture control is the dominant problem of all PROTECTIVE PACKAGING. GLASSINE fills this need extraordinarily well. BUT—the same physical characteristics which enable GLASSINE to be moistureproof, also enable it to do other things. It is primarily *dense*. This means that it is very impermeable to odors. It keeps out *undesirable* odors and keeps in *desirable* odors. A package of butter illustrates the former; a package of fine soap the latter. This characteristic of density could also be referred to accurately as *non-porosity*.

TO REVEAL OR NOT TO REVEAL!!

The manner in which fibers are hydrated to make GLASSINE makes it the most transparent of all papers. Not

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perhaps as transparent as some films—but offering the *greatest* degree of transparency *per unit of cost* of all packaging materials. All that is *usually* needed and at a cost which saves you plenty. It must be recognized that transparency is often a *packaging liability*. Some times it is best that a product be hidden or that harmful light rays be kept away. Often it is better that package design and color be seen than the product itself. GLASSINE is available in bright snow white grades which come with the sheet—no need for expensive white printing.

AND NOW YOU CAN HAVE WET STRENGTH

One looks for water to disintegrate paper. Until a few years ago there was really only one kind of paper that could resist water action. It was and is an expensive sheet. Today science makes it possible to impart wet strength to most paper. When this feature of wet strength is added to the many other exclusive features of GLASSINE and GREASEPROOF papers, you really have something. Here is virtually a wholly new material in terms of low price and high performance and many industries that have wet strength requirements are taking notice.

WE MAKE GOOD MARRIAGES

GLASSINES and GREASEPROOFS supplement the good qualities of many other materials. They combine with paper board to produce some of the neatest and most useful packages of our day. They make protective, strong sheets in combinations with kraft. They assist foils and various transparent films to do the jobs that only these good materials can do but can do better with our help. They often are combined into complex structures so specialized and custom built that they serve just one highly individual purpose. Our industry delights in working out these special applications with industry and our laboratories and engineers are working on such matters every day.

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FOR THAT OLD POCKETBOOK

All of the good things about GLASSINE and GREASEPROOF are available to the user at exceptionally Low COST—the cost of paper. They do things that once upon a time only tin and glass could do. In many instances they are called to package products that are extremely marginal—where every split cent counts. The use of GLASSINE and GREASEPROOF on so many low priced "commodity type" of food items is high testimonial to their economy.

GOOD LOOKS

GLASSINE and GREASEPROOF are so very functional that most discussions of them are apt to stress the *work* they do rather than the way they look. They are just about as pretty as paper can be. GREASEPROOF has that rich vellum look of real animal parchment. GLASSINE can be very transparent or brightly opaque as the occasion demands. Or it can be unbleached, or amber, and accordingly less expensive, when hidden within a carton and not seen. Why pay for expensive transparency that nobody sees? GLASSINE comes in a full range of beautiful colors at a very nominal upcharge as compared with the cost of colored films.

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This discussion has centered largely around the packaging of foods, which is indeed our most important assignment. However, we do hundreds of other jobs. An important application is the protection of metal parts. GLASSINE and GREASEPROOF made with neutral PH are widely used for ordnance packaging where moisture and corrosion are problems. These papers, in fact, played an important, if unspectacular, part in the last war by supplying food and fighting tools to troops in tip-top shape in all parts of the world and in all kinds of climates.

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PROTECTIVE PACKAGING

With

Glassine and Greaseproof Papers

List of Principal Applications

Here is compiled a list of the applications which account for the major tonnage of Glassine and Greaseproof as used protectively and functionally. If moisture resistance is a factor of our paper in the packaging of an item, it is so noted in the table. "IN" means that moisture must be prevented from escaping from the product. "OUT" means that moisture must be excluded. In some instances, it is desirable to keep moisture both out and in, as in the case of chewing gum. Here is a product where loss of moisture results in undesirable brittleness, whereas absorption of excess moisture makes the gum "flabby." The degree of moisture control required is indicated as follows: 1) Slight, 2) Moderate, 3) Considerable, 4) Great. The degree of greaseproofness required is indicated in exactly the same manner.
In this compilation, no explanation is included as to just how our papers figure in packaging an item. Involved may be a bag, an inner wrap, an outer wrap, a liner, a lamination to carton board, paper or other material, or a combination of two or more of these.

MEATS—	Moisture Control	Grease Resistance	Other Functions
Fresh Meats Bacon, ham, pork loins, veal carcasses, pork sausage, meat loaves, fish, poultry.	IN 1 to 2	2 to 4	Wet Strength for some
Frozen Meats Both fresh and cooked.	IN 3 to 4	2 to 3	Wet Strength
Canned Meats Inner liners and wraps as for shrimps, crab meat, tamales, etc.		2 to 3	Wet Strength

Glassine and Greaseproof are widely used in retail merchandising of meat for scale sheets, handling sheets, and inner wraps—also, as separator sheets for steaks, hamburger, chops, etc.

SNACK PRODUCTS—			
Popcorn, Potato Chips, Cheese Corn, Cracklins, Corn Chips, Corn Curls, Shoe String Potatoes, Salted Nuts, Chow Mein Noodles, Cracker Sandwiches	OUT 4	3 to 4	

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CONFECTIONERY—	Moisture Control	Grease Resistance	Other Functions
Candy—Bon Bons Cups, layer sheets Box Outer Wraps	IN 1 to 2	2 to 3	
Candy Bars (Depending on the kind)	Both IN & OUT 2 to 3	2 to 3	
Hard Candies Suckers, mints, sticks, cough drops, etc.	OUT 2 to 4		
Chewing Gum	Both IN & OUT 3 to 4		
Frosting and Fudge Mixes	OUT 1 to 2	2 to 3	
Sugar	OUT 1 to 2		
Syrup Mixes	OUT 1 to 2		
Chocolate Baking, chips, cocoa, pie filling, etc.		2 to 3	
Ice Cream Bars, bulk (liners and can covers)		1 to 2	Wet Strength
Gelatine Desserts	OUT 2 to 3		Flavor Retention
Pudding Mixes Chocolate, lemon, caramel, tapioca, etc.	OUT 2 to 3		
Coconut Dried and Shredded	OUT 2 to 3	2 to 4	
FRUITS AND VEGETABLES—			
Fresh	IN 1 to 2		Wet Strength
Dried Prunes, apricots, raisins, peaches, etc.	IN 2 to 3		
Dehydrated	OUT 3 to 4		
Frozen	IN 3 to 4		Wet Strength

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BEVERAGES—	Moisture Control	Grease Resistance	Other Functions
Coffee Whole Bean and Ground		1 to 2	Flavor Retention
Coffee—Instant With milk solids, etc.	OUT 3 to 4	1 to 2	Flavor Retention
Tea	OUT 1 to 2		Flavor Retention
Malted Milk Plain and Chocolate	OUT 3 to 4	1 to 2	
Fruit Aid Powders	OUT 2 to 3		Flavor Retention
Dehydrated Soup Mixes	OUT 2 to 3	2 to 4*	

(* Such as when chicken fat added)

ASSORTED FOOD PRODUCTS—			
Salt	OUT 1 to 2		
Yeast—fresh	IN 3 to 4		Wet Strength
Yeast—dry	OUT 3 to 4		
Seasonings Poultry and sausage, herbs, spices, celery salt, garlic salt, dried onions, parsley, etc.	OUT 1 to 4		
Popping Corn	IN 4		
Bouillon Cubes	OUT 3 to 4	3 to 4	
Rice Dinner	OUT 2 to 3		
Beans, Rice—semi-cooked	OUT 2 to 3		
Gelatine—powdered	OUT 2 to 3		
Mince Meat, Plum Pudding, etc.	IN 1 to 2	1 to 2	Wet Strength
Cooking & Table Fats Lard Oleo Vegetable Shortening		4 4 4	Anti-Rancidity Wet Strength

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ASSORTED NON-FOOD ITEMS—	MOISTURE CONTROL	GREASE RESISTANCE	OTHER FUNCTIONS
SOAP—high moisture content	IN 2 to 3		Neutral pH Odor Retention
hard milled	IN & OUT 1 to 2		Mold Inhibition
DYES	OUT 2 to 3		
SWEEPING COMPOUNDS		3 to 4	
METAL PRODUCTS All manner of steel parts, hardware, ordnance tools, etc.	OUT 1 to 4	3 to 4	Non-corrosive Neutral pH
PHOTOGRAPHIC SUPPLIES Films, print papers, chemicals	OUT 2 to 4		
RAZOR BLADES	OUT 3 to 4	4	
CHEMICALS Drugs (pills & powders) Various Dry Chemicals Insect Powders	OUT 1 to 4		
PUTTY PRODUCTS Paste putty, calking strips, calking compounds		4	
WAXES Floor wax, shoe polish candles, paraffin		2 to 4	
TOBACCO PRODUCTS Cigarettes, cigars pipe tobacco, chewing	IN 2 to 3		Flavor Retention

DAIRY PRODUCTS

CHEESE Natural and Process	IN 3 to 4	3 to 4	Wet Strength
GRATED OR POWDERED CHEESE	OUT 1 to 2	2 to 3	
POWDERED MILK	OUT 4	1 to 2	
DRIED POWDERED EGGS	OUT 4	1 to 2	
BUTTER	IN 1 to 2	2 to 3	Wet Strength Odor Exclusion

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GRAIN PRODUCTS—	MOISTURE CONTROL	GREASE RESISTANCE	OTHER FUNCTIONS
BREAD, ROLLS, PASTRIES SWEET GOODS (Perishable—baked daily)	IN 2 to 3	1 to 3	
CRACKERS AND COOKIES (Packaged for long shelf life)	OUT 2 to 4	1 to 3	
SPECIALTY BREADSTUFFS Rusk, toasts, zweibach, pretzels, crisps, ice cream cones, etc.	OUT 2 to 4	1 to 2	
BAKING PRE-MIXES For pancakes, waffles, hot rolls, baking powder biscuits, cookies, dumplings, dressings, pie crusts.	OUT 1 to 2	1 to 4	
BREAKFAST FOODS Corn flakes, puffed grains, shredded types, etc.	OUT 1 to 4		
BAKING DOUGHS *Fresh and frozen.	IN 2 to 4	2 to 3	Wet Strength
PREPARED BABY CEREALS	OUT 1 to 3		
DOG AND CAT FOODS		1 to 2	
MALTS	OUT 3 to 4		

The above list is concerned with protective packaging. No attempt has been made to include a wide variety of other uses of glassine and greaseproof where they are used for various and assorted characteristics. These may be: good looks, color, transparency, opacity, density, hardness, smoothness, cleanliness, dielectric properties, etc. Hence no mention has been made of the wrapping of such items as shirts or bottles or cans for reasons of eye appeal. In many instances, lacquered glassines are used to wrap products because of the paper's speedy and efficient performance on automatic heatsealing wrapping machines. Good examples of the latter would be the sealed packaging of Tampons or facial tissues, which need neither grease nor moisture protection, but are wrapped in a sheet offering both merely because of good looks and ability to heatseal. Unmentioned also are the important uses of glassine and greaseproof in the graphic industries as manifold, tracing and drafting paper, or as a master sheet in several processes for making copies of letters and records by means of photosensitive methods. Other non-packaging uses are for interleaving, gummed tape, protective covering for pressure-sensitive gummed products, condenser paper, electric insulation, gift wrapping, covers and fly leaves for fine books, lampshades, cap liners, silk screen printing, stamp hinges, gold leaf, separator sheets in plastic molding, glassine for window envelopes.

GOV'T EXHIBIT NO. 6004
Civil Action 1216

When the dear children clamor for a party, there is a simple way out. A package of powder is magically transformed into a colorful, tasty beverage treat! Glassine Papers provide the exacting moisture and flavor control required for the successful packaging of drink powders.

Remember when popcorn was a small time novelty of the corner wagon and the movie lobby? Today it is a huge tonnage food product sold everywhere — fresh, crisp and good. The moisture protection of Glassine pioneered this evolution.

Have you ever sealed cracks with the clever plastic putty that comes formed in round strips for easy handling? You should—it's wonderful for cutting fuel bills. As in all putty products, there's an oil content the makers found could best be retained by Glassine and Greaseproof Papers.

Now these clever food processors not only package you a cake ready to bake but also a perfect frosting. They take the exertion and guesswork out of the procedure. And Glassine and Greaseproof Papers take the guesswork out of the packaging!

M7502

GOVT EXHIBIT NO. 6025
Civil Action 1216

Properties of Packaging Films

PROPERTIES	SYNTHETIC RESINS				RUBBER BASE
	Vinyl films Vinyl chloride or Vinyl Cl and Ac[3]	*Saran*	*Polyethylene*	*Polyvinyl alcohol*	*Pliofilm*
General					
1. Type of material	Vinyl resins	Polyvinylidene chloride	Polyethylene	Polyvinyl alcohol	Rubber hydrochloride
2. Forms available	Rolls	Seamless tubes, rolls	Rolls & sheets, lay-flat tubing, gusseted tubing	Cast rolls	Continuous rolls & sheets
3. Clarity	Transparent to translucent or colored	Transparent to translucent	Translucent or colored	Transparent	Transparent to opaque
4. Thickness, in.	0.001 or more	0.0005 0.002	0.001 or more	0.001 0.004	Normal 0.0008 0.00225 Densilized 0.0002 0.0004
5. Maximum width, in.	72	40	112	41	48
6. Yield[1]	21,600	16,300	30,000	20,000	24,000
7. Specific gravity, approximate	1.23 1.27	1.68	0.92	1.21 1.31	1.12 1.15
Mechanical					
8. Tensile strength, lb. per sq. in.		7,000 11,000	2,000	10,800 per 2 mil	Yield 2,800 4,000 Ultimate 5,500 7,500
9. Elongation, per cent		25 35	50 600	High value	Yield 10 20 Ultimate 350 500
10. Bursting strength (Mullen) lb. per sq. in.		6	48	185 253	
11. Tearing strength (Elmendorf), grams		40	100 gms. mil.		
12. Folding endurance	Good	Over 500,000	Very high	—	10,000 1,000,000 (M. I. T.)
13. Heat sealing range	200 350°		250 300°	325 350	250 350°
Chemical					
14. Water absorption in 24-hr. immersion test, per cent	Negligible	None	0.005 or less	30 up	0.6 1.3 at 75% R. H.
15. Water-vapor permeability,[2] grams 24 hr., 100 sq. in. at 100 deg. F. 90% R. H.	High rate	0.2	1.0	—	0.5 1.5
16. Permeability to gases (oxygen; carbon dioxide)	—	Very low	High	Very low	Low
17. Resistance to acids	Good	Excellent, except H_2SO_4 and HNO	Excellent	Swells or dissolves	Good
18. Resistance to alkalies	Good	Good except NH_4OH	Excellent	Swells or dissolves	Good
19. Resistance to greases and oils	Good	Excellent	May swell slightly on long emersion	Excellent	Good
20. Resistance to organic solvents	Soluble in some	Excellent	Excellent but may swell slightly on long emersion	Unaffected, extremely resistant	Soluble in aromatic & chlorinated hydrocarbons
Permanence					
21. Resistance to heat (limiting temp.), ° F.	Softens at 200° F.	Softens at 220° F., melts at 310° F.	Softens at 200° F.		160° F.
22. Resistance to cold (limiting temp.), ° F.	Depends on plasticizer	− 20° F.	Less than − 90° F.		Depends on plasticizer
23. Resistance to sunlight	Fair	Excellent	Excellent	Excellent	Fair
24. Dimensional change at high R. H., per cent	None	None	None	High	Slight
25. Resistance to storage	No change	Good	Excellent	Excellent	Good if kept in dark
26. Flammability	Slow burning	Self-extinguishing	Slow burning	2.0	Slow burning
27. Manufacturers	Goodyear Tire & Rubber Co. Bakelite Corp. Reynolds Metals Co. Plastics Films Corp. The B. F. Goodrich Co.	Dow Chemical Co.	E. I. du Pont de Nemours & Co., Inc. Bakelite Corp. The Plax Corp. The Viking Corp. Reynolds Metals Co. and many others	Reynolds Metals Co.	Goodyear Tire & Rubber Co.

[1] Value in sq. in. per lb. per mil (0.001 in.) of thickness. Yields for other gauges (thicknesses) of the same film can be readily calculated from these values.
[2] Using CaCl₂ in Test Dish; method is described in ANC-7 Army-Navy specification. Values reported are based on 1 mil (0.001 in.) of film. The particular value for some films depends upon the type and amount of plasticizer.
[3] Vinyl chloride or chloride-acetate polymers, either formed or applied from solvent solutions, extruding or by calendering hot fluid resin or by coating organisols or plastisols.
[4] Unsupported film cannot be sealed on all types of heat sealers. Special sealing means may be necessary to prevent adhesion to heated metal surfaces or to prevent undue distortion.

The values reported in this chart were obtained from various sources and are believed to represent acceptable commercial standards. Special grades of some of these materials may be obtained which excel in some particular property. Manufacturers should be consulted for additional or specific information or for new uses of their materials. See also chart on Properties of Metal Foils and Foil Laminations, p. 234.

CELLULOSE DERIVATIVES

	Cellophane plain	*Cellophane coated (heat sealing, moisture-proof, anchored)*	*Vinyl nitrile*	*Cellulose acetate*	*Ethyl cellulose*	*Cellulose acetate butyrate*
1.	Regenerated cellulose	Lacquered regenerated cellulose	Polyvinyl chloride and nitrile rubber blends	Cellulose acetate	Ethyl cellulose	Cellulose acetate butyrate
2.	Sheets & rolls	Sheets & rolls	Rolls, sheets, tubing	Sheets & rolls	Sheets & rolls	Sheets & rolls
3.	Transparent or colored	Transparent or colored	Transparent to slightly hazy	Transparent or colored	Transparent to opaque or colored	Transparent and colors white opaque or colored
4.	0.0008–0.0016	0.0009–0.0017	0.001 or more	0.00088–0.003	0.003 or more	0.00090 or more
5.	60	60	60 in.	48	29	40
6.	21,500	19,500	23,500	21,700	24,300	23,400
7.	1.45	1.40–1.55	1.18	1.25–1.35	1.14	1.16–1.18
8.			2500–4000	9,000–14,000	10,000	6,000–9,000
9.	15–25	15–25	250 to 500	20–45	30	60–70
10.				50–85	48	40–75
11.	2–10[1]	2–10[1]	300 gms. mil.	2–12	7	4–16
12.			Very high	—	4,000	—
13.		200–300	220–350	—[1]	—	250–350[1]
14.	High	Low to high	Very small	8–10	2.6	4–5
15.	Very high rate	0.2–1.0	7.0	High rate	High rate	High rate
16.	Dry: very low[4] Moist: variable and higher[5]		Low	High	Very high	High
17.	Poor resistance to strong acids	Poor resistance to strong acids	Good	Poor resistance to strong acids	Weak and fair	Poor resistance to strong acids
18.	Poor resistance to strong alkalies	Poor resistance to strong alkalies	Good	Poor resistance to strong alkalies	Excellent	Poor resistance to strong alkalies
19.	Impermeable	Impermeable	Excellent	Fair	Good	Fair
20.	Insoluble	Insoluble	Soluble in some	Soluble, except in hydrocarbons	Soluble in most organic solvents	Swells in alcohols, hydrocarbons[9]
21.	Begins to char at 375° F.	Begins to char at 300° F.	Softens at 200°F.	Approximately 300° F.	275° F.	200–250° F.
22.	Depends on type and R. H.	Depends on type and R. H.	−50°F.	Becomes brittle[6]	−75° F.	Becomes brittle[6]
23.	No effect	No effect	Fair	Good	Excellent	Good
24.	3–5	3–5	None	.6% at 80% R. H.	Very slight	.3% at 80% R. H. very slight
25.	Deterioration due to age is negligible, provided proper storage conditions are maintained		Excellent	Good	Excellent	Good
26.	Same as newsprint	Same as newsprint	Slow burning	Slow burning	Moderate[3]	50–100
27.	E. I. du Pont de Nemours & Co., Inc. Sylvania Division, American Viscose Corp. Olin Industries		Goodyear Tire & Rubber Co. The Visking Corp. B. F. Goodrich Co. Bakelite Div., U. C. & C. Corp.	E. I. du Pont de Nemours & Co., Inc. Celanese Corporation of America American Products Mfg. Co. Eastman Kodak Co. The Plax Corp.	Dow Chemical Co. The Plax Corp. Reynolds Metals Co.	Eastman Kodak Co The Plax Corp.

[1] Figures represent pull required to continue tear after starting. Force required to start tear is too high to measure on some equipment and therefore is not normally determined.
[2] Depends on moisture content of film, type and amount of plasticizer.
[3] Heat sealable only within narrow temperature ranges. May require modification of sealing equipment.
[4] Brittle at sub-zero temperatures.
[5] Soluble in acetone, methyl acetate, ethylene dichloride.

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GOV'T EXHIBIT NO. 6020
Civil Action 1216

CC: R. R. SMITH - FILE
W. J. HARTE
L. B. STEELE - F. C. LAKE
W. G. HUNTER
C. A. HALEY
H. P. SETTER

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

FILM DEPARTMENT

April 10th, 1950.

MR. J. B. DEAN

CELLOPHANE SALES MONTHLY REPORT
MARCH - 1950

March shipments were 16,731,000 pounds, an increase of 18% above March 1949.

Sales activity during the month was devoted almost entirely to notifying the trade of their allocations and attempting to handle, as best we could, the many problems resulting. A large number of orders had to be returned for adjustment in line with allocations and we were obliged to turn down a large volume of new orders, creating many difficult and serious situations. Indications are that inventories are normal to low and the unfilled level well above the capacity of the Cellophane industry.

While there was general acceptance in our trade that it was necessary to allocate our production, as announced in our February 28th letter, in the interests of proper servicing of the business, there was also criticism that we encouraged the expanded use of Cellophane and then limited its sale and prevented its adoption in the very directions we had been advocating. Criticism has been particularly serious as a result of our selling effort on white bread, prepackaged fresh meat, fresh produce and fractional cracker packaging.

This statement is, of course, literally true. We continued active selling last year and believed there would be a shortage of film because: (1) We were not selling our capacity until September; (2) Previous monthly sales patterns in free market years indicated a substantial decrease in demand in first quarter of this year (which did not materialize); (3) A large plant expansion by our competitor (which now seems to be lagging far behind his published program).

The results of our past selling work are now coming into culmination and adequate film is not available from any source.

Dissatisfaction is widespread, as might be expected. Many previously 100% Du Pont customers are turning to competition for their excess requirements and probably some of our present business will be lost. Others are going back to paper wrapping.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Initial reaction to such a radical step as allocation may be misleading. However, we are currently lining up our "sore spots" with the intent of closely examining their seriousness as hardship cases.

Six Months' Outlook

Our No. 2 Forecast, which we feel is conservative, indicates we will remain substantially oversold. It calls for 56 million pounds for the second quarter of this year and 59 million in the third quarter, as compared with our production capacity of 48 million pounds per quarter.

At present, it appears our allocations will remain in effect for some time, unless there is a significant slump in the national economic picture.

INDUSTRY COMMENTS

Generally, our customers in the food industries, with the exception of those in the candy industry, report business as favorable with the outlook for the next few months as exceptionally good.

The limitations we have placed upon supply of film will retard customers' plans for expansion in self-service prepackaged meat and produce, as well as Cellophane adoptions on white bread, fractional packaging of crackers, Cellophane packages of sliced bacon, margarine and butter packaging, ice cream, and other items. Serious unsatisfied demand for Cellophane also exists in the cereal industry, nuts, potato chips, and frozen food. Alternatives are to get film from competition or return to wax paper, glassine, etc.

SECONDS

The shortage of first class material has substantially increased demands for seconds. Shipments during March were 807,000 pounds, the highest ever made. It has become necessary to restrict the sale of seconds within the supply limitations in order to avoid allocation.

POLYTHENE - DIRECT CELLOPHANE ACTIVITY

Our direct Polythene sales and the number of actual customers so far in 1950 are as follows:

January	- 5,026 pounds	- 12 customers
February	- 9,018 pounds	- 14 customers
March	- 14,75. pounds	- 21 customers

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MR. J. E. DEAN
continued

MONTHLY REPORT
MARCH 1950

March set a new high in both sales and number of customers, but the figures do not include the result of our efforts to sell bags for candy, fresh produce, frozen poultry, etc., through converters. To mention a few examples: Streitmann Biscuit Co. has ordered 100,000 Polythene bags for sales tests on bagged items; Jewel Tea Co. has ordered Polythene bags for frozen poultry; Leaf Brands, Inc. will buy bags for hard candy mixes; and Montgomery-Ward & Co. now is advertising Polythene bags in their catalogue for home and locker freezer use, replacing the Pliofilm bags formerly listed.

The Great A. & P. Tea Company have decided to adopt Polythene on beets, carrots and turnips. At the same time, the Atlantic Commission Company is considering Polythene bags for 5-lb. potatoes. In addition, Pepperell Mfg. Company and Naumkeag Steam Cotton Company have ordered machines preparatory to wrapping sheetsand pillow cases in Polythene. Pepperell's present plans are to wrap only half their production in Polythene, continuing their Pliofilm wrap on the other half.

Many accounts, far too numerous to list, have indicated interest in Polythene, many of them having requested samples. Interest and sales activity on Polythene promises to heighten in future months in view of the shortage of Cellophane and the added promotional effort given this film by our men.

INDIRECT SALES

A major problem during the month was the returning of nearly a million pounds of orders to our customers for revision in line with allocations. There, of course, is pressure upon us for more film from all converters, but more particularly among newer converters, whose business with us had commenced to grow and whose allocation is less than they averaged during the first quarter of 1950 and particularly those who had shifted to us from Sylvania.

Due to unexpected increase in cheese requirements -- including the doubling of Kraft's requirements for 40-lb. blocks -- Marathon has had to discontinue their Freeztex line of locker paper (Cellophane-paper lamination). Current cheese requirements exceed Marathon's total monthly average in 1950 (and, of course, their allocation). Their planned production for cheese alone calls for 289,000 pounds in April and 305,000 pounds in May.

Lassiter Press, Charlotte, N.C., who have exceptionally good acceptance in the hosiery industry, estimates that Cellophane potential for full fashioned hosiery is five million pounds a year.

EXPORT

The current allocation of 400,000 pounds per month is sold through May and orders are coming in faster, giving indications that our

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present 60-day delivery may have to be extended.

Colombia has removed restrictions on the use of Cellophane and eased the import license situation, which immediately resulted in increased orders. Furthermore, increased orders from Milprint de Venezuela indicates growing use of film there.

COMPETITION

Viscose

Our best information is that Sylvania is on a 6 to 8-week delivery basis. They have contacted all of our major accounts and are making extravagant promises of prompt shipment. However, judging from reports from the field, their expansion program is considerably behind schedule.

Sylvania is now predicting no necessity for allocations in the summer, but that there will again be a greater demand for Cellophane than ever in September and on into next winter.

Polythene

Mehl Manufacturing Company is reported being given a special price from Visking due to large potential -- 68¢ per pound rather than 72¢. They are now swinging the majority of their purchasing to Visking. They assure us continuous roll and sheet business will remain our film.

Firestone's polyethylene film is quoted at 78¢ per pound in wide rolls, but the gauge is unknown.

Carlisle Tire & Rubber Company formerly bought Polythene film from both Visking and Du Pont for camelback but, due to wrinkling troubles, are at present buying only from Visking in order to determine which film is giving the trouble.

Pliofilm

Talon is pushing toward 100% adoption of Pliofilm on all zipper packages because of greater durability than Cellophane. This could be 10,000-pound-per-month business. There are now 5 machines wrapping in Cellophane and 2 in Pliofilm.

Vinyl-Rubber

Shellmar's purchases of vinyl-rubber films for margarine pouches is estimated to be dropping 30% to 45% during the second quarter.

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Cry-O-Rap

The Marhoefer Packing Company Division, Chicago, Illinois, is using the new printed tango colored "Cry-O-Rap" developed by Dewey & Almy for large luncheon loaves. This is to replace Visten film and Pliofilm rather than Cellophane.

Saran

Dow is reported to have reduced the price of #517 Saran, 1 mil film -- 27,000 sq. in. -- to a price comparable to Pliofilm used for dried fruit packaging.

Wax Paper - "Tyton"

Marathon's high gloss "Tyton" wax paper printed overwraps are being advertised as used on major frozen food packages, such as:

Pictsweet
Fairmont
Seabrook
Dulany
Birds Eye
Libby's
Agen
Snow Crop
Booth (Glacier Packing Company, San Francisco)
Sparklets (Kelly Farquhar Company, Tacoma, Washington)
Dewkist (Washington Packers, Inc.)

Some of the above adoptions represent lost business for us.

COMPLAINTS

Number of complaints for the month were 77, as compared with 68 for last month. Adjustments for the month were $10,528.90 as compared with $10,322.30. $6,128.57 and $8,355.60, respectively, were for quality reasons.

C. F. BROWN.

CFB:CP

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GOVT EXHIBIT NO. 6029
Civil Action 1216

1927 (Jan Sept)

DU PONT CELLOPHANE

DU PONT CELLOPHANE COMPANY, INC.
NEW YORK, N. Y.

BULLETIN 120-C

August 9, 1927

TO ALL SALESMEN:

Subject: Competition!

Not so long ago there was no such thing as competition in the sale of Cellophane. Today, while we admit that certain competitive factors have come into the field, a clean-cut analysis of our product and service as compared with the importers' shows that the only quality the competitive product has comparable to Cellophane is transparency.

The only advantage the competitor has to offer is price - and usually that is very small. On the other hand, as compared with that inducement, you have 12 important advantages to offer the user of DuPont Cellophane any one or two of which justify its use. It's a wise purchasing agent who looks beyond the quotation, and those who do - in buying Cellophane - realize the following:

1. Assured Source of Supply

The buyer who looks to supplies from abroad to keep his production department operating is liable to disappointments which may prove costly to his firms. Importers are subject to all sorts of unforeseen conditions such as missing steamers, delays, production problems over which they have no control, changes in management and policies of foreign factories and many other circumstances which can and do interfere with a steady and regular influx of materials.

Whereas, the buyer who ties up with the DuPont Cellophane Co. is assured of a full supply of Cellophane when and as needed produced in America by Americans in a plant operating 24 hours a day every day in the year. Furthermore, an ample stock is maintained from which to fill the regular requirements of the trade and to meet any emergencies.

2. One Price

We have one price to all Cellophane users. This is printed and published to the general trade, and anyone buying Cellophane from us may know that no one else is getting a better price than he, - his competitor has no advantage over him. One price and a fair one to all.

3. Uniformity of Thickness

There has been a lot of gossip about the thickness of the foreign material. Tests reveal, however, great variations in its thickness which is a decided disadvantage to the user who requires either heavey or light material for his packages. If too thin the wrappers will destroy abnormal quantities on the wrapping bench; if too thick, it will not twist satisfactory or seal and fold readily.

M1419

Uniformity is maintained in DuPont Cellophane - made possible only by the rigid chemical control prevalent throughout the DuPont organization - standards which the foreign manufacturers never have been able to approach.

4. Uniformity of Strength.

The breaking point, as well as the stretching points and other factors combining, to give Cellophane its strength, are uniform throughout - according to the various thicknesses. A fact that is not true of any of the foreign material tests of which are made regularly.

It is important to remember that while packages wrapped in competitive products may stand up well enough during the favorable summer months, the crucial time will come with the crisp fall weather.

The moral is for your account to select the thickness best adapted for his product, wrap his packages in it and be assured that he has followed his best business judgment by using the product of the leading chemical industrial concern in America.

5. Uniformity of Packages - Well Protected

The Blue Wrapper! It has been counterfeited but there is only one package that is amply protected with heavy wrapping paper, fully waxed, - that is, DuPont Cellophane. This keeps the sheets in prime, usuable, conditions, preventing drying out, sticking and contamination. Furthermore, the label is always there and in the same place telling just what is in the bundle.

6. Insurance of full count

Due to our rigid inspection and the integrity of the house, the purchaser of DuPont Cellophane is assured always of full count. "No gyping!" 1000 sheets to a package - and no less.

7. Reduced Waste - Expert Cutting

Cutting has been reduced to a science in the Cellophane plant and it is rigidly supervised. All sheets are cut full and seldom, if ever now, are there split or knicked sheets. They are full and evenly trimmed on all sides meeting the exact specifications of each order.

8. Full adjustment of defective material

While we do not wish to advertise the fact, there have been a few instances where adjustments have been made that have run into hundreds of dollars. They are the exceptions, but our adjustment policy is such that absolute fairness to the Cellophane user is considered above everything else.

M1419

9. Wrapping Instructions for Economical Handling

Everyone of you can enumerate concerns for whom you have devised methods of wrapping that have enabled them to cut down considerably on the size of sheet used for their packages.
No importer has ever been guilty of that!

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Not only have you worked out improved methods for your accounts, but any good point of general application has been circulated throughout the organization for passing along to the user. That is part of our service and will continue to be. It hasnot been unusual to effect savings ranging from 5% up to 25%, perhaps more. Therefor offset any price inducement offered by competitors.

10. Research Laboratory Service

Many of our customers, who have availed themselves of this unusual cooperation, thoroughly appreciate its value; No other organization handling a product like Cellophane can offer any such service.

There are individual problems where the laboratory can be of considerable help to the Cellophane user and there are the problems of industries. For instance, the Company is now spending hundreds of dollars in a study of one dried fruit industry in an effort to facilitate the marketing of their crops by the fruit packers and thus save them an enormous loss.

11. Cooperative Advertising

No other concern has as much to offer in this respect as DuPont. The Atlantic City exhibit, the DuPont Magazine, Trade Journal advertising, publicity items - all have been enlarged upon at various times. The value of any one phase of this cooperation will amply offset any temporary benefit a competitor might offer.

12. Merchandising Service

As a member of the Cellophane Sales organization you realize that you are not a peddlar of paper or solicitor of orders. Your schooling for the past months or years in the various merchandising problems and methods of the industries with which you have to reckon enables you to study a merchandising problems of an individual account and make recommendations that prove of material benefit to him. Furthermore, you have the opportunity to discuss those problems with other members of our organization and to secure such additional cooperation as will enable you to present a suitable solution to your customer.

Such service is most unusual - it is the kind for which many concerns pay out good money. Our fee is simply that the use of Cellophane should

M1419

be an incidental part of an intelligent merchandising solution.

Finally the 12 points discussed above have been listed on a card attached, for your convenience and ready reference. Stick one card in your pocket or route book.

Run over these points just before calling on accounts throughout the day. Get them in your mind. Memorize them! You will find them most effective talking points to hold business against competitors and to close new accounts.

R. M. HORSEY

RMH:CW

Assistant Sales Manager.

M1419

V CON'T EXHIBIT NO. 6032
Civil Action 1216

S 17

R-12041

DU PONT
ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

RAYON DEPARTMENT
CELLOPHANE DIVISION

June 11, 1948

TO: A. KUNSMAN

FROM: W. G. HUNTER

Subject: NON-VISCOSE FILMS

Ref.: A. E. Buchanan to H. J. White

At todays prices (78¢ to 87¢/lb.) and at the present stage of development, polythene is not in a competitive position with Cellophane in the frozen food market. However, if 30¢ flake and a film selling price of 56¢/lb. becomes a reality, polythene can become a real factor in this industry.

There are certain developments needed in using polythene economically in the frozen food industry, however. Technique of lining frozen food cartons is not fully developed. Suitable adhesives and processing problems in handling a limp film are the primary negatives.

Bags made from polythene tubing are available now and can be used as carton liners by hand filling with no more difficulty than hand filling Cellophane bags. Cellophane on the other hand is being used as an integral part of a carton in the form of a liner and in this way is a more economical packaging process.

Polythene cannot be used to replace printed Cellophane overwraps on frozen food cartons because of mechanical difficulties in running polythene on a wrapping machine and because it does not at present have the transparency or sparkle of Cellophane nor does it possess printing qualities that are needed.

There are other packaging possibilities for polythene outside the frozen food market which might be developed when polythene prices are based on 30¢ flake and when printing qualities and transparency are improved. When this is accomplished, the Cellophane bag business is vulnerable. Printing will probably be the principal stumbling block because economical bag fabrication will depend on extruded tubing in many sizes and this form of product will present technical and economic problems from a printing standpoint, even though suitable inks are developed.

DUPONT

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

RAYON DEPARTMENT
CELLOPHANE DIVISION

As previously stated, unprinted bags for use with thermoplastic labels or as liners for other containers are now being produced and price is probably the only negative.

In the fabric replacement field there is a sizeable potential. The only disadvantage we can see in this field is in obtaining printed designs for decorative materials. We understand that colored films are being produced but unless we were in the polythene business in a big way, we doubt that colored polymers would be an attractive venture economically.

We know too little about V Film to pass judgement on its potential possibilities. From information available, it will have limited packaging fields such as textiles, paper or other products not requiring moisture protection. It does not appear to fit into the meat or perishable food industries. It certainly has no place in the fabric replacement field.

In reviewing the proposal made by Technical Division, we cannot find too much fault with their recommendation to clarify company policy on non-viscose films; to attempt development of a transparent polythene; to develop technique for printing of polythene; and to get set enter the non-viscose film field when developments dictate that such a ove should be made. We are not qualified to pass on the development of VA, HEVA, and V films but we believe that research on non-viscose films should continue with the objective of developing a family of films for all purposes.

WGH:br

October 20th, 1948.

Mr. J. L. Fahs,
DEVELOPMENT DEPARTMENT,
8062 Du Pont Building.

CELLOPHANE FOR BREAD WRAPPING

Ref: Your letter October 1st

The value of Cellophane as a packaging material for white bread is essentially the same as its value for packaging any bread. This has been clearly demonstrated by the experience of bakers who have wrapped white bread for many years.

In order to fully understand this statement, it is necessary to examine closely what the baker must do in order to be successful.

The bread business demands that the baker be able to sell a highly perishable product within 48 hours after it leaves his ovens. He must do this in the face of the stiffest competition in the food industry and secure sufficient volume in order to operate profitably.

In order to do this he must secure adequate retail distribution and influence a sufficient number of consumers. To perpetuate his business, he must constantly guard against the inroads of competition from other foods as well as his own direct competitors.

The accomplishment of these things requires an expenditure of money -- money for packages, for advertising, for salesmen, for trucks, for display racks and material, and often for more vigorous competitive effort such as discounts, premiums, etc. In short, he buys his volume.

The argument for Cellophane on bread is based primarily on the fact that it is a sales builder rather than a mere protector of bread. As such, its influence extends to all elements that are involved in the cost of obtaining volume -- advertising, salesmen's commissions, trucking cost, stale returns, etc.

In addition, there are a considerable number of hidden savings in the plant that accrue to the value of Cellophane on a dollars and cents basis. In fact, some bakers who have used Cellophane for

CM-168(R)

8160

8160

many years state that, although the cost of material is higher when all factors are considered, it actually does not cost them more than wax paper.

So that a review may be made of these and a more comprehensive view obtained of the case for Cellophane on bread, we are attaching the following studies made on this subject:

1. "Investment in Volume"
2. "Cellophane Prospectus"
3. "The Effect of One War Time Change in the Baking Industry"
4. "Kitchen Competition"

We believe these will indicate why the baking industry is today our largest consuming market and why it represents the largest single element in our forecasts.

It might be pertinent to set down here our progress to date and our future outlook.

Our progress in the baking industry has been a matter of <u>selling</u> progression rather than <u>demand</u> progression. Our original efforts were directed toward so-called variety breads for two reasons:

1. Variety breads are a relatively small percentage of total production (about 20) -- hence, any wide departure would not embrace the industry's major volume items.

2. The baking industry is made up of over 2,500 wholesale bakers (mostly bread bakers) representing a tremendous number of individual sales problems. We felt these could best be attacked from the angle of variety breads.

Selling progression has been directly related to our ability to do two things; namely, create a Cellophane consciousness and sell the hidden as well as obvious advantages.

Our 1948 forecast (which will be easily met) included 46 million pounds in the baking industry. Of this, 8 million pounds was for

CM-168(L)

Mr. J. L. Fahs,
concluded

October 20th, 1948.

white bread. Our 1951 forecast shows 61 million pounds in the industry, of which approximately 15 million pounds is in white bread, the balance in variety breads, cake and sweet dougns.

This forecast shows the expectation of nearly doubling our white bread sales as against an increase of about 20% for the balance of the industry.

Because of the tremendous potential in white bread and the large number of bakers, our policy has been always to urge extreme caution in forecasting white bread. This forecast, therefore, represents only business we are quite sure we can get with normal selling effort.

However, due to the extremely competitive situation that exists in the white bread market, new adoptions of Cellophane are expected to influence the spread of use in local markets even more rapidly than on other products of the industry. This has always been true in the past and it is happening today where adoptions for white bread are made.

We have mentioned above that progress in the bread field was measured by the creation of a Cellophane consciousness as well as the ability to sell the advantages. As one gauge of the existence of such consciousness in the baking industry, it is interesting to note the action of wax paper converters.

Several leading wax converters, sensing from the baking industry this consciousness of the value of Cellophane, have installed printing equipment for Cellophane, even though sufficient film is not now available to them. Their explanation is that they see a growing change imminent in bread packaging and are preparing to go along with it.

We believe that this gives the high-spots of our opportunity on bread.

C. F. Brown,
DIRECTOR OF SALES.

CFB:CP
Attachments

CM-168(2)x

EXTRACTS PERTAINING TO REGENERATED CELLULOSE PRODUCTS

Wilmington, Delaware
January 26, 1948

TO: EXECUTIVE COMMITTEE

FROM: RAYON DEPARTMENT

MONTHLY REPORT - DECEMBER, 1947

OPERATIONS AND SALES

Cellophane

Production and sales in December were in line with the forecast.

The American Viscose Corporation recently announced a further increase of 5 cents per pound in the price of moistureproof cellophane but leaving the price of plain cellophane unchanged. At about the same time, American Viscose announced a reduction in their discount to converters from 7½% to 5%. On the basis of the increased price and reduced discount, our price on moistureproof cellophane to converters is about 6 cents per pound lower. In 1947 moistureproof varieties of cellophane accounted for 112,000,000 pounds or 85% of our sales. Our shipments to convertors totaled 44,000,000 pounds or approximately 33% of our total output.

Cellophane sales for 1947 totaled 132,000,000 pounds, an increase of about 25,600,000 pounds or 24% over 1946. We continue to allocate cellophane to insure equitable distribution. Our pattern of distribution for 1947 on a poundage basis was almost identical with 1946 except for sales to commercial agents and exports who received percentagewise a smaller share.

We expect to be short of supplying the demand for some time to come although our No. 1 Forecast for 1948 visualizes total sales of 168,000,000 pounds, a prospective increase of 36,000,000 pounds or 27% over actual sales for 1947, as the result of authorized expansions at present plant locations.

Cellulose Bands

Sales for the year 1947 of 1,354,000,000 bands were 238,000,000 units or 15% below 1946. The demand for bands on the part of the liquor industry had dried up by midsummer and we discontinued production for several weeks. Currently, output is at 80% of capacity. After a seasonal low in February, we expect this business to return to a more normal rate of activity.

Cellulose Sponges

During 1947 sponge sales reached a new high total of 271,800,000 cubic inches, an increase of about 43,000,000 cubic inches or 19% from 1946. The demand continues unabated. Within the next month we expect an estimate from the Engineering Department on facilities to increase the capacity of the sponge plant to about 550,000,000 cubic inches per year or roughly double the present capacity.

EXHIBITS

A. Statistical Data - Sales and Transfers - Operative Earnings

B. Sales and Transfers - Operative Earnings

B. M. May
GENERAL MANAGER

RAYON DEPARTMENT

STATISTICAL DATA - SALES & TRANSFERS - OPERATIVE EARNINGS, ETC.

(DOLLARS IN THOUSANDS)

ONE MONTH - DECEMBER 1947	Cellophane Division
Production as % of Capacity	93.2
Sales & Transfers as % of Capacity	90.7
Sales & Transfers	5,529.8
% Increase over Forecast	.3
Operative Earnings	1,210.3
%Increase over Forecast	1.2
% Of Sales & Transfers	21.9
% Operative Return on Yearly Basis	24.7
% Turnover on Yearly Basis	112.9
Number of Wilmington Salary Roll Employees	557
Number of Works Monthly Roll Employees	620
Number of Wage Roll Employees	3,330
TOTAL	4,507

TO DATE - DECEMBER 1947	
Production as % of Capacity	95.9
Sales & Transfers as % of Capacity	94.8
Sales & Transfers	61,615.7
Operative Earnings	11,441.3
% of Sales & Transfers	18.6
% Operative Return on Yearly Basis	20.9
% Net Return on Yearly Basis	12.2
% Turnover on Yearly Basis	112.4
Average Total Investment	54,815.6

EXHIBIT "A"

RAYON DEPARTMENT

SALES AND TRANSFERS - OPERATIVE EARNINGS (DOLLARS IN THOUSANDS)

MONTH OF DECEMBER AND TO DATE 1947

	Sales & Transfers		Operative Earnings		Operative Earnings As % of Sales & Transfers	
	Amount	% Increase Over 1946	Amount	% Increase Over 1946	1947	1946
ONE MONTH - DECEMBER						
Outside Sales						
Cellophane Division						
Cellophane	5,054.1	77.9	1,062.1	126.7	21.0	16.5
Bands	253.6	(25.4)	133.8	(1.9)	52.8	40.1
Sponges	110.0	4.2	36.4	(1.6)	33.1	35.0
C/A Film	74.0	(17.2)	6.4	166.7	8.6	2.7
PV Vilm	23.3	(3.7)	6.0	5.3	25.8	23.7
* All Others	7.7	-	(35.6)	-	-	-
AL	5,522.7					
Transfers						
Cellophane Division	7.1	(75.3)	1.2	(73.3)	16.9	15.7
TO DATE - DECEMBER						
Outside Sales						
Cellophane Division						
Cellophane	54,992.8	30.6	10,263.1	(15.1)	18.7	28.7
Bands	3,348.6	(18.5)	1,197.9	(34.4)	35.8	44.4
Sponges	1,535.4	18.6	425.0	(.4)	27.7	33.0
C/A Film	1,061.6	12.9	71.8	24.9	6.8	6.1
PV Film	209.2	8.3	32.0	-	15.3	-
* All Others	50.5	-	(608.3)	-	-	-
TOTAL	61,198.1	25.6	11,381.5	(20.7)	18.6	29.4
Transfers						
Cellophane Division	417.6	(22.7)	59.8	(61.5)	14.3	28.8

* Includes Research Class "A-11 CS", "A-111", Patent Work Class "D-CS", and Royalties Received.

EXHIBIT "B"

DU PONT

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON 98, DELAWARE

RAYON DEPARTMENT
COMPRISING
ACETATE DIVISION
CELLOPHANE DIVISION
NYLON DIVISION
RAYON DIVISION

CC: A. Kunsman
G. W. Filson
Division Managers

February 3, 1949

~~B. M. Day~~
GENERAL MANAGER

I am attaching a "Statistical Data" schedule for our Acetate and Cellophane Divisions, showing separate information for the more important products, for the one month and to date December 1948. (Note Acetate excludes "Orlon" acrylic fiber.)

Copies are supplied Messrs. Kunsman and Filson for their respective Divisions.

MANAGER - CONTROL DIVISION

MST:lr

J.10 YM 26
CIII-722

BETTER THINGS for BETTER LIVING... THROUGH CHEMISTRY

RAYON DEPARTMENT

CELLOPHANE DIVISION

STATISTICAL DATA - SALES & TRANSFERS - OPERATIVE EARNINGS, ETC.
(DOLLARS IN THOUSANDS)

ONE MONTH - DECEMBER 1948	CELLOPHANE FILMS	BANDS	SPONGES	SPONGE YARN	TOTAL CELLOPHANE DIVISION
PRODUCTION AS % OF CAPACITY	98.3	53.6	99.1	77.8	97.5
SALES & TRANSFERS AS % OF CAPACITY	99.0	59.0	96.1	73.0	98.3
SALES & TRANSFERS	7,165.3	238.0	180.6	64.7	7,648.6
% INCREASE OVER FORECAST	(0.5)	(16.8)	10.4	(6.2)	(0.9)
OPERATIVE EARNINGS	1,782.4	78.9	73.9	10.7	1,945.9
% INCREASE OVER FORECAST	(0.4)	(11.5)	60.7	(21.9)	0.4
% OF SALES & TRANSFERS	24.9	33.2	40.9	16.5	25.4
% OPERATIVE RETURN ON YEARLY BASIS	32.5	47.8	89.7	46.1	33.8
% TURNOVER ON YEARLY BASIS	130.7	144.1	219.3	279.0	132.9
NUMBER OF WILMINGTON SALARY ROLL EMPLOYES					1,247
NUMBER OF WAGE ROLL EMPLOYES					3,725
TOTAL					4,972

TO DATE - DECEMBER 1948					
PRODUCTION AS % OF CAPACITY	97.0	58.2	98.5	65.1	96.3
SALES & TRANSFERS AS % OF CAPACITY	96.8	58.6	98.4	65.2	96.2
SALES & TRANSFERS	75,221.7	2,875.3	1,901.4	295.5	80,293.9
OPERATIVE EARNINGS	15,841.5	811.6	527.8	16.5	17,211.4
% OF SALES & TRANSFERS	21.1	28.9	27.8	3.6	21.4
% OPERATIVE RETURN ON YEARLY BASIS	25.6	44.0	56.1	9.9	26.5
% NET RETURN ON YEARLY BASIS	13.2	22.7	28.9	5.1	13.7
% TURNOVER ON YEARLY BASIS	121.5	152.1	202.0	279.8	123.8
AVERAGE TOTAL INVESTMENT	61,896.1	1,890.7	941.1	105.6	64,833.5

EXHIBIT A-2

CM-722 ax

V Department Exhibit 1572

EXTRACTS PERTAINING TO REGENERATED CELLULOSE PRODUCTS

Wilmington, Delaware
January 20, 1950

TO: EXECUTIVE COMMITTEE

FROM: RAYON DEPARTMENT

MONTHLY REPORT - DECEMBER, 1949

OPERATIONS & SALES

Cellophane - Operative earnings of the Cellophane Division of $2,875M were a new high and $829M or 40% over the forecast as the result of substantially higher-than-expected production and sales. December production was at capacity with routine casting machine maintenance deferred.

December shipments of 17.7MM pounds constitute a new record, exceeding the forecast by 19%, and December of last year by 22%. Sales for the year 1949 were 178MM pounds, up 18MM pounds or 11% from 1948. December 1949 shipments were at the annual rate of 212MM pounds.

The demand for cellophane continues far in excess of supply and we find ourselves still far behind in deliveries to the point where we are obliged to curtail our selling efforts to new accounts and new fields of application. Current indications are that sales will continue at capacity for the next six months.

Cellulose Acetate Film - Sales for the year 1949 were 1.7MM pounds or 9% less than 1948. Currently cellulose acetate film is sharing the high demand for cellophane and December sales of 174M pounds were 39% better than forecast and 26% in excess of December of last year.

Polythene Film - Sales in December of 34M pounds were 34% better than forecast. Adaptation of certain types of wrapping machines to polythene was brought to successful conclusion. This is expected to open up new sales opportunities. To-date sales of polythene film were 123M pounds, and sales for the year 1950 are forecast at 2.2MM pounds.

Cellulose Sponges - Sponge sales for the year 1949 of 379MM cubic inches represent an increase of 14% over 1948, but December sales of 30MM cubic inches were 12% less than forecast and 3% less than December, 1948. We continue to operate at reduced capacity, but expect a gradual improvement during the next several months.

Cellulose Bands - This business continues to improve, with December sales of 137MM units representing an increase of 44% over the forecast and 46% over the comparable month of last year. Sales for the year of 1,193MM units were slightly ahead of 1948. After a seasonal lull during the first part of the year we look to further improvement.

EXHIBITS

A. Statistical Data - Sales and Transfers - Operative Earnings
B. Sales and Transfers - Operative Earnings -
E. Working Capital Standards

/s/ R. L. Richards
GENERAL MANAGER

CM-738
20MM113

RAYON DEPARTMENT

STATISTICAL DATA - SALES AND TRANSFERS
OPERATIVE EARNINGS, ETC. (DOLLARS IN THOUSANDS)

ONE MONTH - DECEMBER 1949	"Cellophane" Division
Production as % of Capacity	99
Sales & Transfers as % of Capacity	101
Sales & Transfers	9,305
% of Forecast	119
Operative Earnings	2,875
% of Forecast	140
% of Sales & Transfers	30.9
% Operative Return on Yearly Basis	48.2
% Turnover on Yearly Basis	155.9
No. of Wkly. Salary Roll Employes (Mo. End)	1,303
No. of Wkly. Roll Employes (Mo. End)	3,902
Total	5,205

TO DATE - DECEMBER 1949	
Production as % of Capacity	95
Sales & Transfers as % of Capacity	95
Sales & Transfers	93,475
Operative Earnings	25,433
% of Sales & Transfers	27.2
% Operative Return on Yearly Basis	35.6
% Net Return on Yearly Basis	19.0
% Turnover on Yearly Basis	130.8
Average Total Investment	71,474

EXHIBIT "A"

CM-73,2

RAYON DEPARTMENT

SALES & TRANSFERS AND OPERATIVE EARNINGS
(DOLLARS IN THOUSANDS)

DECEMBER 1949

	Sales and Transfers				Operative Earnings				Operative Earnings As % of Sales & Trans.				% Net Return on Investment			
	December 1949		To Date		December 1949		To Date		Dec.		To Date		Dec.		To Date	
	Amount	As % of Dec. 1948	Amount	As % of 1948	Amount	As % of Dec. 1948	Amount	As % of 1948	1949	1948	1949	1948	1949	1948	1949	1948
Cellophane Division																
Cellophane	8,504	121	85,936	117	2,749	147	24,337	145	32.3	26.5	28.3	22.9	25.2	16.3	18.3	13.0
C/A Film	136	128	1,323	96	30	158	249	117	22.1	17.9	18.8	15.5	17.4	10.4	10.8	9.4
Bands	363	153	3,022	105	119	143	743	88	32.8	34.9	24.6	29.5	35.4	24.5	18.8	22.6
Sponges	190	105	2,362	124	77	103	747	140	40.5	41.4	31.6	28.1	25.9	46.8	27.9	28.9
Sponge Yarn	86	132	711	240	20	182	128	582	23.3	16.9	18.0	7.4	36.6	33.3	23.7	.9
Polythene	26	-	95	-	(28)	-	(84)	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	26	24	-	-	11	32	-	37.5	42.3	30.9	-	-	-	-
(A) All Others	-	-	-	-	(92)	-	(698)	-	-	-	-	-	-	-	-	-
Total Cellophane Division	9,305	122	93,475	116	2,875	148	25,433	148	30.9	25.4	27.2	21.4	24.9	16.9	19.0	13.2

EXHIBIT "B"

(A) Includes Research Class "A-11 CS", "A-111", Patent Work Class "D-CS", and Royalties Received, etc.

WORKING CAPITAL STANDARDS

	Number of Months' Supply			
	Proposed 1950 Standard	1949 Standard	1949 Actual(1)	Forecast 1949 First 9 Mos.1950
Cellophane Division				
Raw Materials	1.11	1.24	1.08	.96
Semi-finished product	.25	.25	.24	.24
Finished Product	.49	.23	.22	.41
Accounts Receivable	.50	1.00	.80*	

* Average actual for 9 months

(1) Average actual for 10 months

EXHIBIT "E"

(13)

January 26, 1951

GX 573

TO: EXECUTIVE COMMITTEE

FROM: FILM DEPARTMENT

MONTHLY REPORT - DECEMBER 1950

SUMMARY OF OPERATING RESULTS

		M Dollars	
	Average Investment	Sales and Transfers	Operative Earnings
December		10,350	3,114
% of Forecast		102.1	110.0
% of November, 1950		109.0	118.5
% of December, 1949		111.2	108.3
To-Date December, 1950	74,379	110,794	33,513
% of To-Date December, 1949	104.1	118.5	131.8

January Sales Forecast

Our No. 1 - 1951 forecast of sales and transfers for January is $9.9MM. We expect to meet it.

OPERATIVE EARNINGS

December operative earnings include $398M representing a portion of the Film Department's share of receipts from the sale of Old Hickory Village. This benefit to earnings was partially offset by (1) a charge of $77M resulting from the recalculation of accelerated depreciation for the year 1950 and (2) an increase of approximately $62M in legal expenses

relating to the Lawsuit United States vs. du Pont, involving cellophane.

1950 operative earnings of $33.5MM established a new record, surpassing 1949, the previous high year, by 31.8%.

OPERATIONS AND SALES

CELLOPHANE

December sales of 17.9MM pounds equaled the forecast and exceeded December 1949 by 1%. Sales of 202.4MM pounds in 1950 set a new record, surpassing 1949, the previous record year, by 24.6MM pounds, or 14%.

The acute shortage of cellophane continues. With substitute wrapping materials in short supply also, our customers, particularly in the food industry, are faced with a serious packaging problem.

Defense Order business was 200M pounds, approximately 1% of total sales, in December.

Production was maintained at capacity throughout 1950. Continued operation at this level is largely contingent on the availability of raw materials. The ethylene glycol situation has eased and the partial substitution of glycerin and urea for glycol is being discontinued in January. However, the shortage of sulfur is still a threat. One supplier has already curtailed shipments of sulfuric acid. We can cover this shortage from other sources unless and until our other suppliers are also obliged to curtail shipments.

In order to offset increases in cost, we increased prices on January 1st by 4¢ and 5¢ per pound. This brings our overall average price approximately equal to that of our principal competitor who raised his prices December 15, 1950. Our net price to the converter trade is

CM 5/10

lower than competition by approximately 2%.

CELLULOSE ACETATE FILM

Sales in 1950 were at a new high of 1.9MM pounds, or 11% over the year 1949. December sales of 156M pounds were 6% below forecast and 10% under December 1949.

Production was at capacity in December but tests on flake made from wood pulp delayed shipments. The tests were successful and place us in position to use wood pulp flake when available. This flake costs 5¢ per pound less than flake made from cotton.

"DO" business amounted to approximately 2% of total sales in December and is increasing.

Capacity production should continue during the next six months.

POLYTHENE FILM

Record sales of 295M pounds in December made possible by greater than usual flake receipts, exceeded forecast by 34%. Sales of 1.7MM pounds for the year 1950 were limited by a shortage of flake.

Defense Order shipments in December declined to 34M pounds from 86M pounds in November, but military demand is expected to increase during the next six months.

In order to offset increases in cost, we increased prices on January 19 by 4¢ per pound. This brings our prices approximately equal to those of our largest competitor who had previously raised his prices.

CELLULOSE BANDS

December sales of 153MM units were 25% above forecast and 14% over December 1949. Some export orders originally scheduled for November were not shipped until December.

CAI-57

Sales for the year 1950 totaled 140MM units, an increase of 20% over 1949.

Sales are currently running at capacity rate which is unusual as January is customarily a slow month in the liquor industry. We believe this condition to be temporary and that volume will drop off later.

In order to offset increases in cost, we increased prices on bands by approximately 6.5% on January 19.

CELLULOSE SPONGES

Sales in December of 53MM cubic inches were 6% over forecast and 77% above December 1949. Record sales of 607MM cubic inches during the year 1950 exceeded 1949 by 60%.

Unfilled orders at the end of December represented two months' production. Mop manufacturers report that demand for self-wringing sponge mops is increasing beyond their production capacity.

Sponge yarn sales of 98M pounds in December were 9% over forecast but 2% less than December 1949. Sales of 1.4MM pounds during the year 1950 were 73% greater than in 1949.

RESEARCH

"V" polymer of good quality has been produced in the semi-works polymerization unit at Yerkes, operating for a 48-hour run on an integrated basis starting with DMT. Output was at the designed capacity rate of 50 pounds per hour. A similar unit scaled up about tenfold is planned for the continuous production of film in the proposed "V" film plant.

PM-570

PURCHASES REQUIRING APPROVAL OF SUB-COMMITTEE

During December the Sub-Committee on Purchases and Sales approved a contract with Algonquin Chemical Company, covering sulfuric acid requirements up to 100M net tons, for Clinton and Seneca plants as follows:

Plant	Material	Quantity (100% Sulfuric Basis)	Price
Clinton	66° Sulfuric	70M net tons	$21.47/net ton, freight equalized with Dubuque, Iowa
Seneca	25% Oleum	30M net tons	$21.00/net ton, freight equalized with Chicago, Ill.

The seller is allowed price adjustment at any time on 90 days' notice, but contract may be cancelled at any time that buyer and seller disagree on a price increase. The buyer is protected against the decline of competitive prices.

The contract covers a two-year period from January 1, 1951 through December 31, 1952, and year to year thereafter subject to three months' notice of cancellation by either party, prior to commencement of any yearly period beginning January 1, 1953.

Maximum value of the contract is approximately $2,131,500.

POWER COMMITMENTS

As of December 31, 1950, power commitments of the Film Department totaled less than $100M.

WORKING CAPITAL STANDARDS

We submit for your Committee's approval working capital standards for the year 1951 as shown below. These standards have been approved by the Treasurer's Department.

CM-570

	Number of Months' Supply			
	Proposed 1951 Standard	1950 Standard	1950 Actual*	Forecast #1 - 1951 Year 1951
Raw Materials	1.13	1.11	.95	1.10
Semi-Finished Product	.25	.25	.18	.25
Finished Product	.20	.49	.18	.15
Accounts Receivable	.50	.50	.50	

*Average actual for 9 months

D. F. Carpenter
GENERAL MANAGER

CM-570

FILM DEPARTMENT

STATISTICAL DATA - SALES & TRANSFERS - OPERATIVE EARNINGS, ETC.

(Dollars in Thousands)

ONE MONTH - DECEMBER 1950		% Increase or (Decrease) Dec. vs. Nov.
Production as % of Capacity	101	1 *
Sales & Transfers as % of Capacity	100	- *
Sales & Transfers	10,350	9
% of Forecast	102	-
Operative Earnings	3,114	19
% of Forecast	110	-
% of Sales & Transfers	30.1	2.4 *
% Operative Return on Yearly Basis	43.2	2.3 *
% Turnover on Yearly Basis	158.6	10.6 *
No. of Wilm. Salary Roll Employes (Mo. End)	1,270	1
No. of Wage Roll Employes (Mo. End)	3,693	-
Total	4,963**	-

TO DATE - DECEMBER 1950		% Increase or (Decrease) 1950 vs. 1949
Production as % of Capacity	98	3 *
Sales & Transfers as % of Capacity	98	3 *
Sales & Transfers	110,794	19
Operative Earnings	33,513	32
% of Sales & Transfers	30.2	3.0 *
% Operative Return on Yearly Basis	45.1	9.5 *
% Net Return on Yearly Basis	19.9	0.9 *
% Turnover on Yearly Basis	149.0	18.2 *
Average Total Investment	74,379	4

*Where comparisons of percentages are involved, the percent increase or (decrease) merely represents the difference in the percentages for the comparative periods.

**Includes Film Department Employes only.

EXHIBIT "A"

2968

FILM DEPARTMENT

SALES & TRANSFERS AND OPERATIVE EARNINGS
(Dollars in Thousands)

DECEMBER 1950

	Sales and Transfers				Operative Earnings				Operative Earnings As % of Sales & Transfers				% Operative Return-on Investment			
	Dec. 1950		To Date		Dec. 1950		To Date		Dec.		To Date		Dec.		To Date	
	Amount	As % Of Dec. 1949	Amount	As % Of 1949	Amount	As % Of Dec. 1949	Amount	As % Of 1949	1950	1949	1950	1949	1950	1949	1950	1949
Cellopnane	9,129	107	99,181	115	2,793	105	30,592	128	30.6	31.2	30.8	27.7	42.3	48.2	45.3	35.2
C/A Film	135	99	1,515	115	25	86	321	135	18.5	21.3	21.2	17.9	24.9	34.0	27.9	22.4
Polythene	222	854	1,208	-	1	-	(189)	-	.5	-	-	-	2.1	-	-	-
Bands	427	118	3,785	125	151	119	1,110	151	35.4	35.0	29.3	24.3	68.2	67.6	46.9	36.1
Sponges	352	185	3,873	164	129	170	1,360	184	36.6	40.0	35.1	31 3	69.7	49.2	60.5	51.5
Sponge Yarn	85	99	1,232	173	15	75	319	253	17.6	23.3	25.9	17.7	35.8	77.1	60.6	46.8
TOTAL SALES & TRANSFERS	10,350	111	110,794	119	3,114	108	33,513	132	30.1	30.9	30.2	27.2	43.2	48.2	45.1	35.6
TOTAL OUTSIDE SALES	10,299	111	110,269	119	3,113	108	33,557	132	30.2	31.0	30.4	27.3				
TOTAL TRANSFERS	51	165	525	118	1	-	(44)	-	2.0	-	-	6.1				

EXHIBIT "B" - DECEMBER

CD-5704

INVENTORIES

Book value of inventories vs. standard at the end of December 1950, was:

Total Film Department	M Dollars Investment 11/30/50	M Dollars Investment 12/31/50	Standard	Variance from Standard Amount	Variance from Standard %
Raw Materials & Supplies	4,401	4,386	5,075	(689)	(14)
Semi-Finished	953	1,008	1,336	(328)	(25)
Finished	949	1,023	3,349	(2,326)	(69)
Grand Total	6,303	6,417	9,760	(3,343)	(34)

Stores

December investment in stores, included in raw materials and supplies, was as follows:

409	445	436	9	2

Excess Raw Materials

Glycerine is the only material for which the total on hand and commitments exceeded three months' requirements in excess of investment standard and $200M in value.

	Quantity M Pounds	Value M Dollars	Month's Supply Std.	Month's Supply Actual	Month's Supply Excess	Unit Value Book	Unit Value Market
On hand	2,596	1,221	1.4	1.5	.1	.470	.543
Commitment Regular	2,510	1,272	-	1.5	1.5	.507	.543
Synthetic	14,299	3,472	-	8.4	8.4	.243	.543
Total	19,405	5,965	1.4	11.4	10.0	.307	.543

EXHIBIT "C"

CM-570c

AUTHORIZATION OF RESEARCH PROJECTS

EXCEEDING $50,000

	Parts		000 Dollars Amount Authorized	
	Date of First	Total	Total To-Date	Last 6 Months 1950
NEW PRODUCTS				
Nylon Films	1942	8	186	78
Scouting Research for New Films	1944	13	167	22
V Film	1946	28	1747	591
EXISTING PRODUCTS, EXISTING PROCESSES, NEW PROCESSES				
Polythene Film	1943	27	659	61
Vinylidene Chloride Moisture-proof Coatings for Films	1944	26	894	72
Melt Extrusion - Equipment and Process Research	1946	6	249	-
Cellophane Casting Studies	1947	7	418	5
Scouting Studies on Dispersion Coating	1947	4	114	47
Pullout & Curl - Cellophane	1947	17	128	7

	000 Dollars Expenditures	Expense
1950 Research Budget	$1915	$2229
1950 Actual	1962	2234
Difference	-47	-5
%	2.5	.2

EXHIBIT "D"

CM-5702

[redacted]

CELLULOSE ACETATE FILM

July sales were 172M pounds, 1% above both forecast and July 1950.

Defense order shipments were 17M pounds, or 10% of sales.

The Celanese Corporation has expanded its production capacity and is now offering additional quantities of film to the trade. Our expansion is scheduled for completion late in August and the increase in capacity should be fully available in October. There are indications that a free market for this film is approaching. However, demand for our product is firm and sales are expected to equal capacity for the next several months.

POLYTHENE FILM

July sales of 163M pounds were 7% below forecast and 5% under July 1950.

Defense order shipments were 21M pounds, or 13% of sales.

Demand continues considerably in excess of supply. Sales during the next several months, at least, will continue to be limited by the quantity of flake allocated to us.

Due to the shortage of flake, the film plant was shut down for three weeks, from July 24 to August 15, inclusive.

CELLULOSE BANDS

July sales were 110MM units, 10% over forecast and 13% under July 1950.

It is expected that the normal fall increase in demand will be less than usual due to heavy buying early in the year. As a result, sales for the balance of the year will probably be less than forecast.

CM-626

3972

CELLULOSE SPONGES

July sales of 49MM cubic inches were 9% below forecast and 2% above July 1950. Sales of sponge block for mops declined due to restrictions on the use of metals by mop manufacturers.

A revised sponge sales agreement has been reached with the Fabrics & Finishes Department, under which they will continue to sell all consumer sponges. As heretofore, the Film Department will sell to the converters and the Photo Products Department will sell fine pore sponges to the photographic trade. The Fabrics & Finishes Department will expand its sales forces to provide adequate coverage to sell the increased volume of consumer sponges which will become available when our Columbia, Tennessee, plant is completed.

The agreement further provides that the Film Department will reimburse the Fabrics & Finishes Department for its sponge selling expense plus 3% on the sales value of consumer sponges sold. The Film Department will also continue to pay all sponge advertising and promotion costs.

Sponge yarn sales in July were at a record high of 134M pounds, 1% under forecast and 3% above July 1950. The previous record of 133M pounds was established in September 1950. June production of 138M pounds was also at a new high, exceeding the previous record of 129M pounds established in August 1950. Sales should equal forecast for the balance of the year.

RESEARCH

"MYLAR" POLYESTER FILM

Announcement has been made to the trade that we have filed application to register the name "Mylar" as the trade-mark for our polyester film.

CM-626

3973

NYLON FILM

We have advised the Polychemicals Department that we are not interested in Types 3, 8, and 10 nylon as candidates for film and we recommended that the nylon non-assertion letter be revised to allow others to extrude films in all gages from these types of flake. This action was taken after a review of past field work by the Rayon and Polychemicals Departments and after further study of properties, potential prices, and uses. For types 3 and 10, the largest visible market was ground and phase insulations in electric motors where "Mylar" polyester film is considered superior and is potentially lower in cost. Type 8, which in many respects is comparable to vinyl films, has no large known use which will command the necessary price.

While there is a possibility that sufficiently large markets might be found for these films through further intensive research and development, it now appears that our efforts will be better spent on "Mylar" and other films with unusual properties.

DELEGATION OF AUTHORITY

The following authority to sign Appropriation Requests was delegated:

$5,000

C. E. Fogg
Assistant Plant Manager
Yerkes Cellophane

D. F. Carpenter
GENERAL MANAGER

CM-126

[redacted]

STATISTICAL DATA - SALES & TRANSFERS - OPERATIVE EARNINGS, ETC.

(Dollars in Thousands)

ONE MONTH - JULY 1951		% Increase or (Decrease) July vs. June
Production as % of Capacity	99	(1) *
Sales & Transfers as % of Capacity	98	-
Sales & Transfers	10,437	4
% of Forecast	102	-
Operative Earnings	2,366	3
% of Forecast	106	-
% of Sales & Transfers	22.7	(0.2) *
% Operative Return on Yearly Basis	34.2	1.2 *
% Turnover on Yearly Basis	151.1	7.2 *
No. of Wage Roll Salary Roll Employes (No. End)	1,350	1
No. of Wage Roll Employes (No. End)	3,956	1
Total	5,306 **	-

TO DATE - JULY 1951		% Increase or (Decrease) 1951 vs. 1950
Production as % of Capacity	99	1 *
Sales & Transfers as % of Capacity	99	1 *
Sales & Transfers	70,929	13
Operative Earnings	16,825	(12)
% of Sales & Transfers	23.7	(6.9) *
% Operative Return on Yearly Basis	33.2	(9.8) *
% Net Return on Yearly Basis	9.1	(11.1) *
% Turnover on Yearly Basis	148.6	1.3 *
Average Total Investment	81,834	12

*Where comparisons of percentages are involved, the percent increase or (decrease) merely represents the difference in the percentages for the comparative periods.

**Includes Film Department Employes only.

EXHIBIT "A"

CM-626.

FILM DEPARTMENT

SALES & TRANSFERS AND OPERATIVE EARNINGS
(Dollars in Thousands)

JULY 1951

	Sales and Transfers				Operative Earnings				Operative Earnings As % of Sales & Transfers				% Operative Return on Investment			
	July 1951		To Date		July 1951		To Date		July		To Date		July		To Date	
	Amount	As % of July 1950	Amount	As % of 1950	Amount	As % of July 1950	Amount	As % of 1950	1951	1950	1951	1950	1951	1950	1951	1950
Cellophane	9,443	108	63,360	112	2,176	76	15,204	85	23.0	32.6	24.0	31.4	34.8	50.7	33.0	46.0
C/A Film	150	112	1,054	121	35	77	178	90	16.4	23.8	16.9	28.9	23.1	33.3	24.2	39.2
Polythene	122	103	902	173	-	-	(19)	-	-	-	-	-	-	-	-	-
Bands	292	81	2,543	138	55	79	690	163	19.0	31.6	27.1	23.0	23.6	59.1	43.2	31.8
Sponges	314	100	2,396	111	90	[illegible]	710	100	28.5	38.4	29.6	33.1	46.4	68.0	53.0	54.1
Sponge Yarn	116	103	692	98	20	60	62	33	17.6	30.4	9.0	26.9	25.3	77.0	12.7	63.8
TOTAL SALES & TRANSFERS	10,437	107	70,949	113	2,366	75	16,825	88	22.7	32.0	23.7	30.6	34.2	50.7	35.2	45.0
TOTAL OUTSIDE SALES	10,362	106	70,573	113	2,358	75	16,800	87	22.8	32.1	23.8	30.7				
TOTAL TRANSFERS	75	218	[illegible]	131	8	194	25	-	10.8	12.1	6.7	-				

EXHIBIT "B" - JULY

8201

3976

INVENTORIES

Book value of inventories vs. standard at the end of July 1951 was:

M Dollars

Total Film Department	Investment 6/30/51	Investment 7/31/51	Standard	Variance from Standard Amount	%
Raw Materials & Supplies	6,437	6,238	5,078	1,160	23
Semi-Finished	1,157	1,032	1,266	(234)	(18)
Finished	1,175	1,245	1,317	(72)	(5)
Grand Total	8,769	8,515	7,661	854	11

Stores

July investment in stores, included in raw materials and supplies, was as follows:

560	537	520	17	3

The No. 3 forecast for August was based on operating at 90% of capacity. We now expect to operate at capacity in August and have maintained inventories on that basis. Thus the standard shown for Raw Materials and Supplies, which is calculated on the basis of No. 3 - 1951 forecast of August sales and transfers, is too low by 10%, so that the variance over adjusted standard is 13%.

The largest single item in excess of Standard is glycerine, the inventory of which has been built up in anticipation of a critical supply situation. Currently, purchases are for less than consumption.

Inventories in general are being reviewed and commitments are being reduced to bring inventories in line with Standard in an orderly manner.

Excess Raw Materials

Glycerine is the only material for which the total on hand and commitments exceeded three months' requirements in excess of investment standard and $200M in value.

	Quantity M Pounds	Value M Dollars	Month's Supply Std.	Actual	Excess	Unit Value Book	Market
On Hand	2,846	1,368	1.4	1.6	0.2	.481	.543
Commitment							
Regular	1,751	905	-	1.0	1.0	.517	.543
Synthetic	12,218	3,004	-	7.0	7.0	.246	.543
Total	16,815	5,277	1.4	9.6	8.2	.314	.543

The commitments for regular glycerine are not subject to cancellation. The contract with Shell Chemical Corporation, covering the synthetic glycerine, provides for payment of four cents a pound on any quantity we fail to take during a calendar quarter. In effect, the contract could be cancelled by payment of this penalty, totaling $489M.

EXHIBIT "C"

cm-626 cx

16

C-8
6x575

DU PONT
ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON 98, DELAWARE

RAYON DEPARTMENT
COMPRISING
ACETATE DIVISION
CELLOPHANE DIVISION
NYLON DIVISION
RAYON DIVISION

(Government Exhibit 575)

August 11, 1947.

G. W. Filson
~~[illegible]~~
R. A. Ramsdell
F. B. Ridgway

STATISTICS

We have recently prepared some statistical data dating from the inception of the Rayon and Cellophane Companies to December 31, 1946. A copy of these data for your respective Divisions is attached, with the thought that it may be of some interest.

[signature]
MANAGER - CONTROL DIVISION

MWL-K

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CM-225

Government Exhibit 518

675-L-A

In accordance with your request earlier this week, we have reviewed the attached memorandum. Since we were unfamiliar with the technical phases of the question, our review, by necessity, is general in nature.

From a financial analysis standpoint, it probably would be interesting to include data with respect to return on investment - operative and net. Return on investment plays a prominent part in our Executive Committee charts and is quite significant in analyzing sales, earnings, and investment. A rough calculation of operative return for our Cellophane Division and Sylvania for 1945 shows a substantial difference, namely, 36% vs. 10%, respectively.

We have no further suggestions to offer with respect to this memorandum.

Louis C. JALES
ASSISTANT TREASURER

CWS:nha

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BETTER THINGS for BETTER LIVING... THROUGH CHEMISTRY

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Dkt 2-62 Plf

CM-170x

COMPARISON OF DATA FOR SYLVANIA AND CELLOPHANE DIVISION
1936 THROUGH 1945

	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936
Pounds Sold										
Cellophane	95,600	93,973	97,095	87,489	104,762	81,659	73,746	61,498	60,423	54,917
Sylvania	28,500	28,088	29,000	28,500	27,700	22,113	19,462	17,132	15,650	14,536
Dollar Value										
Cellophane	39,814	39,257	39,234	34,651	39,975	31,049	29,340	25,576	25,055	22,687
Sylvania	11,554	11,305	11,701	11,435	10,382	8,232	7,636	7,093	6,640	6,182
Total Investment at Year End										
Cellophane Div.	45,177	44,164	47,024	46,736	47,104	35,975	34,245	33,306	28,923	26,262
Sylvania	21,719	20,985	19,372	19,182	17,383	16,093	14,810	13,315	13,116	11,933
No. Casting Machines at Year End										
Cellophane	48	48	48	48	56	48	48	48	43	40
Sylvania	20	20	20	20	20	20	18	16	16	14
Pounds Sold Per C.M.										
Cellophane	1,992	1,958	2,023	1,823	1,871	1,701	1,536	1,281	1,405	1,373
Sylvania	1,425	1,404	1,450	1,425	1,385	1,106	1,081	1,071	978	1,038
Total Investment Per Annual Lb.										
Cellophane Div.	.473	.470	.485	.534	.450	.441	.464	.542	.479	.478
Sylvania	.762	.747	.668	.673	.628	.728	.761	.777	.838	.821
Permanent Investment Per Annual Lb.										
Cellophane Div.	.371	.377	.388	.434	.360	.370	.395	.467	.400	.397
Sylvania	.353	.355	.341	.347	.352	.410	.429	.448	.479	.463
Net Earnings Per Lb.										
Cellophane Div.	.067	.048	.044	.046	.061	.085	.129	.116	.089	.105
Sylvania	.031	.030	.032	.035	.042	.052	.069	.039	.038	.080
Net Return on Invest.										
Cellophane Div.	14.1	10.2	9.2	8.6	13.7	19.3	27.7	21.5	18.7	21.9
Sylvania	4.0	4.0	4.8	5.2	6.6	7.1	9.1	5.0	4.6	9.7

U.S. Pounds and Dollars expressed in thousands.
Sylvania Total Investment represents Total Assets before Reserve for Depreciation to compare with Cellophane Division Investment.

4-F

Copy to Messrs:
H. C. Haskell - 2
B. M. May - 2

TO: EXECUTIVE COMMITTEE

SERIAL NO. S-2769

FROM: DEVELOPMENT DEPARTMENT

MARCH 9, 1948

CELLOPHANE EXPANSION

In accordance with request in your Advice of Action of January 21, 1948, there is submitted to you herewith Development Department Report on the above-mentioned subject prepared by Messrs. J. L. Fahs and H. E. Ford.

Respectfully submitted,

E. K. Gladding

E. K. Gladding
Director

Dup
1-55
PJR

CM-102(a)

TO: EXECUTIVE COMMITTEE SERIAL NO. S-2759

FROM: DEVELOPMENT DEPARTMENT MARCH 9, 1948

CELLOPHANE EXPANSION

I N D E X

	Page No.
INTRODUCTION	1
MARKET CONSIDERATIONS	1
RAW MATERIALS	7
ECONOMIC CONSIDERATIONS	8
SUMMARY AND CONCLUSIONS	11
A. Market Situation	11
B. Economics of Expansion	12
RECOMMENDATION	12

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CELLOPHANE EXPANSION

INTRODUCTION

The record of the Company's manufacture of cellophane since the start of the first plant in 1924 is one of steady growth and prosperity. The first full year's modest production of about 1,000,000 pounds has been expanded over a hundred-fold to 132,000,000 pounds in 1947 without saturating the market. Throughout this 24-year period the business has been consistently profitable, showing a satisfactory rate of return until the war years when governmental regulations, antipathy to increasing prices, and material shortages reduced the return below the average of the previous years.

Sales forecasts for the next few years indicate the necessity of further increasing capacity if the U. S. requirements are to be met, and the Cellophane Division of the Rayon Department has been contemplating the erection of an additional plant. Recently, however, the Company's position in the market has been attacked in a complaint brought by the Department of Justice in the District Court of the United States for the District of Columbia.

Until the uncertainties created by this suit have been removed by final decision, or until our share of the market has declined, it must be recognized that additional investment in new plant capacity would be attended with risk. Before such a program is undertaken, it is appropriate to review the available information as to the country's need for more cellophane, the possible ways of meeting such need, and the economic effects upon the Company from the various alternatives.

MARKET CONSIDERATIONS

The completion of authorized projects will enable du Pont to produce 169,000,000 pounds of cellophane for the year 1948 and

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full use of all authorized facilities throughout 1949 will boost the capacity for that year to 187,000,000 pounds. In addition to Company production, competition is expected to produce a maximum of 51,000,000 pounds in 1948, making the total available for sale and export 220,000,000 pounds in 1948 and 238,000,000 pounds in 1949 and beyond. Rumors have been heard that competition plans a further expansion to bring its capacity to possibly 75,000,000 pounds by the end of 1951. Until these rumors can be confirmed, no more than 51,000,000 pounds can be counted on from competition in forecasting the total available to meet the demands of the market.

The demand for cellophane, as compared with the probable production, assuming no further expansion by du Pont or competition, is estimated by the Cellophane Division to be as follows:

	Production Capacity MM Pounds			Estimated Demand	Total Deficiency
Year	Du Pont	Competition	Total	MM Pounds	MM Pounds
1948	169	51	220	240	20
1949	187	51	238	270	32
1950	187	51	238	300	62
1951	187	51	238	320	82

From these figures, which are based on present Company price and unit weights, it is evident, if the demand has been accurately forecast, that cellophane sales will have to be allocated for several years or until new capacity can be completed to supply the deficiency. If competition does not expand beyond 51,000,000 pounds, a new 16-machine plant, capacity 64,500,000 pounds*, would just enable supplies to catch up with demand in 1950, the earliest date a

*Plant capacity varies according to the distribution of production as to the different types and grades of cellophane. A rating of 64,500,000 pounds assumes a reasonable pattern, including about 15% of plain transparent cellophane.

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new plant, if started almost at once, could be brought into full production. Even if competition expands to 75,000,000 pounds, a new 16-machine plant will be required to balance production with demand in 1951.

The Cellophane Division is confident that the estimated demand figures as shown above are on a conservative basis. Since 1941 cellophane has never been freely available and sales have been rationed. Forecasts have of necessity been made with the realization that production can only be increased gradually and to a specific figure pending authorization of additional plants. Under such limitations, it has not been possible to conduct an extensive selling campaign covering all potential markets. It has been impractical to conduct extensive sales campaigns in such fields as white bread, meat, and fresh produce because only limited amounts could be allocated to these uses, amounts far below the potential requirements if the campaign were successful.

Even though the cellophane figures were thought to be conservative an independent check has been made by the Development Department. In order to cover the field broadly in the time available, visits were confined to (a) trade associations and publishers of trade papers in fields using large amounts of cellophane, (b) converters, and (c) machine manufacturers. Industries represented included tobacco, candy, food, super-markets, chain stores and independent grocery stores. All reports confirmed the demand for more cellophane than could be obtained and the desire to continue and, in most cases, to expand its use.

The great bulk of tobacco products that can be wrapped in cellophane have been wrapped in cellophane for some time and little increase, beyond that occasioned by the normal growth of the industry can be expected. The baking industry, excluding white bread, is

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largely converted to the use of cellophane with every prospect of continuing and expanding to include products not now being wrapped, or being wrapped in other material. It is believed that a large potential for increased consumption exists in the white bread field, especially with the independent bakers. Sales in this field have never been pushed because sufficient material to supply the market has never been in sight.

The use of cellophane for meats is expanding rapidly. Super-markets and self-service stores are attempting to adapt their meat departments to self-service to eliminate bottlenecks in their present setups. A transparent wrap is an essential since meats must be seen to be sold and self-service requires that items be protected while on display. For the same reasons the use of cellophane is growing for the packaging of fresh produce. It has been demonstrated by actual tests that cellophane packaging of items such as beans, spinach, celery, and tomatoes not only increases sales through impulse buying but outsells unpackaged goods even when priced higher.

Converters unanimously are emphatic that many potential outlets for cellophane are not being covered because of the shortage of material. Selling is still and will continue to be necessary against competitive wrapping materials but no aggressive selling campaigns to obtain new customers have been possible for several years. Salesmen are mere order-takers and allocators to their trade rather than producers of increased or new demands.

Machine manufacturers report backlogs of orders equal to a full year of their production. Much of this demand is for improved more efficient machines to replace older machines using cellophane but much of it is for packagers wishing to expand their use of the material or hoping to be able to secure supplies when the machines are delivered. Manufacturers were found to be developing machines

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to utilize cellophane in new fields or to reduce the cost of using cellophane by mechanizing operations now performed manually.

In addition to a sales forecast, the Cellophane Division has estimated a potential market volume for cellophane which might be achieved in several years provided sufficient productive capacity is available to permit aggressive selling in all markets. The table below shows a comparison of the potential with the 1949-1950 sales forecast by principal market divisions:

	Potential 1000 lbs.	% of Total	Du Pont Sales Forecast (Domestic only) 1949 - 1950 1000 lbs.	% of Total
Tobacco and cigarettes	32,250	6.5	28,659	13.5
Food products	392,300	80.0	152,556	72.3
Textiles and hosiery	12,000	2.5	3,536	1.7
Soaps, drugs and miscellaneous	52,250	11.0	26,327	12.5
Total	488,750	100.0	211,078*	100.0

*Assuming adequate production capacity.

Information obtained during the Development Department's survey of the market indicates that the potential figures shown above are a reasonable expectation for the future growth of cellophane. The largest increase both in poundage and percentage is expected to be obtained in the food products market. The gain shown includes large increases for most types of foodstuffs already using cellophane but the major expansion is expected in bakery goods, fresh produce, and meats. In the case of bakery goods, the estimate includes only a small portion of the total wrapping material now being used for white bread and the increase for meats is believed to be well within reasonable expectations in view of the growing trend to self-service stores.

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Past experience has demonstrated that, in a general business recession, the need for better merchandising creates new opportunities for cellophane.

The potential forecast is believed to be conservative and reasonable since the increase over 1947 sales is no more than 320,000,000 pounds whereas the total wrapping paper production in the United States reported by the Bureau of the Census for 1946 amounted to 1,840,000,000 pounds. Cellophane cannot hope to compete in all wrapping paper fields but it does in a large number of them. In many instances it is used where no wrapping was formerly considered necessary. Of the wrapping paper total, wax paper accounted for 435,000,000 pounds in 1946 and the large portion of this used for white breads and other foodstuffs is quite vulnerable to cellophane competition.

It is the general consensus that the market demands increased production of cellophane. The Company has been the leader in introducing the use of cellophane and for the past decade has sought aggressively to increase consumption. Many manufacturers have converted their operations to its use and have made large investments in packaging and processing machinery because of its availability. Large converter companies have been formed whose sole business is dependent on a continued supply of material. Machinery companies are continuing to invest money in research and design to develop new machines to use cellophane and a large proportion of their present business is dependent on the continued availability of cellophane. Unless adequate supplies become available to meet the expanding demands of the market, many of the Company's customers and companies producing cellophane packaging machinery will surfer financial loss. The Company, as the acknowledged leader in the introduction and production of cellophane, has a definite responsibility to see that the

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market is supplied either by its own production or encouraging others to enter the business. Unless this responsibility is fulfilled the Company will be justifiably criticized for the failure and will suffer irreparable damage through loss of confidence by its customers and the general public.

RAW MATERIALS

Since before the war, the major uses for dissolving pulp (rayon and cellophane) have been steadily expanding. Today and for the near future pulp supply and demand are in delicate balance and the ability of the Company or a new manufacturer to expand cellophane production is dependent on the availability of dissolving pulp. A recent review of this situation by the Purchasing and Development Departments indicates that present North American producers will be able, with completion of expansions already planned, to supply the Company through 1950.

A new 16-machine cellophane plant started now for completion in 1950 would require approximately 30,000 tons of dissolving pulp per year. This amount will be difficult or impossible to obtain unless pulp producers can increase the output of present plants or will install new ones. A new pulp mill is under construction in Canada for the Celanese Corporation. While much of this production is expected to be captive, the overall balance will be improved. Present dissolving pulp producers are considering new mills or expansions and other pulp companies not at present producing dissolving pulps are considering its production. The Company's largest supplier has stated that it would increase its capacity should the Company decide to go ahead with a new cellophane plant. It can be concluded that when pulp is required for an additional cellophane plant, it most probably can be obtained if the new plant is put up by the

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Company. Probably a new producer could make satisfactory arrangements with our present supplier.

Even though caustic soda, an important raw material for cellophane, has been in short supply over the past several months, the situation is becoming progressively better. It is the opinion of the Purchasing Department that little difficulty would be encountered in obtaining supplies on 18-months' notice for a new cellophane unit starting in 1950-51. Carbon bisulphide and glycerin, other important raw materials, should be available for a new plant.

ECONOMIC CONSIDERATIONS

It is forecast that the country will need 300 million pounds a year of cellophane capacity by 1950, and 320 million pounds by 1951. If present competition does not provide more than 75 million pounds then du Pont's capacity plus new competition in 1951 should be at least 245 million pounds, approximately 58 million pounds more than now authorized.

Large increases in capacity have been gained, or are in the process of being attained, from development of the cellophane process to higher speeds of operation. However, there is no immediate prospect of any substantial further increase in the capacity of the existing plants. The sure way of meeting the 1950 and 1951 requirements is to install additional machines and appurtenances to operate by the established method.

The Rayon Department's immediate plan (project 5564) contemplates the installation of a 32-million pound (8-machine) plant. Such a project presumably would have to be followed within a few months by another project to double the plant's capacity if the 1951 requirements are to be balanced. Operation of a 32-million pound plant should be only transitory. Accordingly, in considering the

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economics of expansion by du Pont, it is appropriate to look ahead to the results to be expected from a 16-machine plant.

Reliable estimates of the investment and operating costs for a new plant are not available. The following figures are based upon high-spot estimates, but are believed to be indicative of the results to be expected with respect to a new 16-machine plant built and operated by du Pont:

	Total	Per Unit
Sales (64,500,000 lbs.)	$ 27,500,000	$ .426
Cost		
Mill cost (normal depreciation)	18,100,000	.281
Freight & delivery	0	0
Selling expense	325,000	.005
Administrative expense	515,000	.008
Total	18,940,000	.294
Operative Earnings	8,560,000	.132
Less: all other expense (5.6%)	480,000	.007
Net earnings before F.P.T.	8,080,000	.125
Less: Federal Profits Tax at 35%	2,830,000	.044
Net Earnings	5,250,000	.081
Investment		
Permanent (incl. $4,000,000 steam)	$ 30,000,000	.465
Working capital	6,000,000	.093
Total	$ 36,000,000	.558
% Return		
Operative		23.8%
Net		14.6%

The country's need for more cellophane would be met, and at the same time du Pont's percentage of the market would be reduced substantially, if a competitor would go into the business with a new 16-machine plant. With a smaller sales volume, the unit selling and management expense probably would be higher than for du Pont, and the working capital might be higher. Nevertheless, it is not unreasonable to expect that, meeting du Pont's present prices, a competitor could earn at least 10% net return with a new 16-machine plant, built or

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acquired at present construction cost. The prospect of a 10% net return might be adequate to induce a capable concern to go into the cellophane business. Opportunities elsewhere for a higher return, at present construction costs, are not plentiful.

With the addition of a new producer with a 16-machine plant, the amount and distribution of the country's cellophane production capacity will be as follows, depending upon the capacity of American Viscose Company:

	A		B	
	Lbs. per year	%	Lbs. per year	%
Du Pont	187,000,000	61.9	187,000,000	57.2
American Viscose	51,000,000	16.8	75,000,000	23.0
New Producer	64,500,000	21.3	64,500,000	19.8
Total U. S.	302,500,000	100.0	326,500,000	100.0

Another possible way of providing more cellophane and reducing du Pont's percentage of the productive capacity is to sell one of the present 16-machine cellophane plants to a new competitor and then build a new 16-machine plant for du Pont. The layout of each of the 16-machine plants is such that sale of the cellophane facilities is feasible, except as to boiler plants and other services shared with other operations. A price such that a new operator could earn approximately 10% net return on investment for any one of the 16-machine plants would approach the cost of replacing the same capacity.

From the standpoint of a new producer, buying an existing plant at a fixed price would have the advantages, compared with contracting for a new plant, of avoiding uncertainty as to plant investment, and of minimizing the time required to get into the business. On the other hand, no one of the present plants is well situated to serve the country as a whole, and the new competitor would be faced with an unsatisfactory problem of product distribution

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Also, the lack of independence on steam, water supplies and other services would be a decided disadvantage.

From du Pont's standpoint, the sale of an existing plant at any reasonable price would result in a large federal profits tax, perhaps upwards of three million dollars. Thus, in replacing the same capacity, du Pont would be out of pocket by the amount of the tax on the sale plus some probable deficiency between the gross sales price and the replacement value. Another disadvantage to du Pont would be the personnel problem. It might be difficult to assure the present plant personnel, including the supervisory force, of receiving as favorable treatment in all respects from a new employer. The problem is not necessarily insoluble, but it is one that should not arise at all in the case of putting a new competitor into business with a new plant.

SUMMARY AND CONCLUSIONS

A. Market Situation

1. Du Pont's production capacity will reach 187 million pounds a year by the end of 1948. The capacity of competition probably will reach 50 million, and may increase to 75 million pounds a year, to make the total U. S. capacity 237 to 262 million pounds a year.
2. The domestic demand for cellophane for established uses is forecast to be 300 million pounds in 1950 and 320 million pounds in 1951. There is a potential market for around 500 million pounds a year, when supplies permit aggressive selling.
3. If competition does not expand its capacity beyond 50 million pounds a year, demand will exceed presently authorized supplies by 62 million pounds in 1950. Even

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if competition expands to 75 million pounds a year, demand will exceed presently authorized supplies by 58 million pounds in 1951. Accordingly, a new 16-machine plant will be needed, probably by 1950, almost certainly by 1951.

4. The necessary raw materials are expected to be available by the time a new 16-machine plant can be ready for operation.
5. The users of cellophane are making large investments in cellophane-handling equipment to do their part in taking care of the foreseen demand.
6. Du Pont has a strong moral obligation to see that action is taken to meet the cellophane market requirements.

B. Economics of Expansion

1. A new 16-machine plant, built and operated by du Pont, probably could earn around 15% net return with the present cellophane price schedule.
2. A competitor probably could earn around 10% net return, meeting du Pont's present prices, with a 16-machine plant built or acquired at its present construction cost.
3. The cellophane plants at Clinton, Old Hickory, and Spruance are physically severable from du Pont's other operations, except as to some utility services. However, the sale of any one of these plants at a fair price would impose a substantial profits tax upon du Pont, would probably not afford a location satisfactory to a new producer, would not of itself afford the needed additional capacity, and would have other disadvantages.

RECOMMENDATION

Attempt to interest some other concern in going into the manufacture of cellophane (as well as cellulose bands, if desired)

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with a new 16-machine plant, on the basis of du Pont's furnishing its technical information and licenses under its pertinent patents for a moderate fee.

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Special Report

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Distribution on Last Page

CONFIDENTIAL

THIN FILMS OUTLOOK

J. A. Mitchell

Rayon Department
Technical Division - Cellophane Research Section
E. I. du Pont de Nemours and Company
Buffalo, New York

May 16, 1949

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THIN FILMS OUTLOOK

Moistureproof cellophane, introduced to the trade in 1927, is the cornerstone of a spectacular and profitable industry which in many ways has revolutionized the art of packaging and merchandising. It made the buying public packaging conscious and, as it grew, simultaneously stimulated greater use of light-weight papers. In 1931, cellophane sales were about 28 million pounds and by 1948, the volume had increased to 204 million pounds. During the same period the approximate total sales of packaging papers, cellophane and other non-fibrous films together rose from 300 million to one billion 500 million pounds.

As cellophane grew, cost was lowered and quality improved. At the same time our search for new films went through periods of varying degrees of activity. Manufacture of cellulose acetate film was started in 1935 and, while limited in volume potential, this film has found firm outlets. During the period 1941-1947, small-scale production of polyvinyl alcohol film was undertaken to explore markets after which it was abandoned for lack of promising outlets. At the present time melt-extruded polythene film is being manufactured and sold at a rate which may reach four million pounds annually within a year.

In recent years a number of new manufacturers have entered the thin films field and the synthesis of polymers for films has become an important objective of the work in many research laboratories. It is timely to ask how this increased general activity affects the position of cellophane and if our program on cellophane and new films is headed in the right direction. This report attempts to assemble available information which will lead to reasonable answers to these questions and point the way to the attainment of practical goals.

SUMMARY AND CONCLUSIONS

Cellophane

The thin films business faces a bright future. Present markets are growing and expansion into new markets is likely. Cellophane has a firm position in this generally favorable situation. It has been successful because we have made it a versatile product with many end uses by solving the problems encountered in the packaging trade. With continued technical support, cellophane may well continue the leader among transparent films. It is not a foregone conclusion that this position can be maintained indefinitely, however, because quite conceivably, cellophane could be displaced by a new film lower in price and having cellophane's virtues in one or more respects. Synthetic polymers are available now which produce films selling in the cellophane price range, though there is none yet known which for packaging purposes is equivalent to cellophane in both properties and cost.

As a defense against the threat from non-cellulosic films and to meet more intense competition from other cellophane manufacturers, research to improve quality and widen versatility will

become increasingly important. Aggressive action to introduce improved cellophane films, with new ranges of properties, is necessary in order to capitalize on the advantages of an early position in the trade. As an example, saran-coated film is our present answer to competition from films like Pliofilm, and, by establishing its market now, we will have an edge on possible newer and cheaper films entering the field behind us. At every opportunity development work on specialized cellophanes should be pushed parallel with and reasonably independent of work on conventional types. As aggressive a job must be done on new cellophanes which require significant process changes as has been done on more conventional films for produce and meat packaging. This is the only soft spot we see in the cellophane picture.

Our cellophane manufacturing capacity by the end of 1949 will be about 193 million pounds annually. Forecasts indicate an increase in our annual production of 50 million pounds during the next ten years and ultimately an additional 100 million pounds will be needed, bringing the total du Pont production to 343 million pounds. Both of these expansion steps can best be done at existing plant locations, by capitalizing on tested, but not completely developed, technical advances. These include improvements in the chemical building, the use of double-sheet casting and the introduction of aqueous dispersion coating. We believe, in the light of present knowledge, this can be done without increasing permanent investment per annual pound. As a plan for action, during the next twelve to eighteen months we should squeeze as much production as possible from existing facilities, after which for about three years, the growing cellophane market should absorb increased production from American Viscose and a new producer. By 1953, our plans for additional capacity should be formulated, tested and ready for plant installation.

Prospects for New Films

The opportunity for new films is evident. There are large volume packaging outlets not adequately filled by cellophane. These and other markets, such as fabric replacement, are open to invasion. As was the case with cellophane, a new film will be as successful as it can be made useful. It can be made useful if we know the market and are able to incorporate into a basic film the properties which the market demands.

Our knowledge in the packaging field, based upon twenty-five years of experience, gives us a position of advantage, beyond all others, on applications to which cellophane has successfully or unsuccessfully aspired. Our information on other markets is, by comparison, inadequate.

In order to give a film the properties which the market demands we must have the widest possible latitude in modifying either process or raw materials. The most advantageous position can be realized only if we manufacture both polymer and film.

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This is a primary argument for using du Pont polymer instead of going outside to buy.

As a pattern for procedure in establishing new films, we propose to choose candidates from du Pont polymers which appear to have possibilities from the properties and cost standpoint, explore outlets and build up market knowledge with these films, select and place on a selling basis a few of the most promising ones and build up their markets by adapting them to specific uses. To do this effectively it is essential that the efforts of Departments supplying polymers be coordinated with the film program and that polymer research be directed specifically toward films. We need to speed up the program on getting selected film candidates out into the field. This "make and try" procedure is dictated by lack of knowledge in new film markets. We are essentially in the same position today that the synthetic fiber work was five to ten years ago. A background of information needs to be developed which correlates film properties with use requirements and in turn, polymer composition and structure with film properties.

Three years ago we decided to abandon solvent-casting and concentrate on melt-extrusion, the lowest cost film-forming method. Although this strategy resulted in a temporary set-back, we believe it was a wise move and our new films program is on the right track. Our melt-extrusion equipment is now operating on a semi-works basis.

A number of film candidates have been discarded in past work. From today's viewpoint the procedure in handling polythene represents the only real error. We fumbled badly on polythene and lost the advantage of a pioneering position by underestimating the size of the market and limiting process development work to a solvent-cast film. We are now producing melt-extruded polythene film and expect to regain a strong position even though, as a latecomer, we are entering a highly competitive field. In addition to polythene, three other new film candidates, Polymer-V, ethylene/vinyl acetate and hydrolyzed ethylene/vinyl acetate, have been selected for trial. The success of polythene and other candidates will be governed by the extent of our market knowledge and our facility in meeting the demands for quality and price as well as solving critical service problems.

Polythene

Polythene is the most promising newcomer in the thin films field. Its outstanding properties are chemical inertness and good durability, especially at low temperatures. Melt-extruded polythene is low in cost and on an area basis, at equal film thickness, now sells in the cellophane price range. It is estimated that the market for polythene film will grow to 50 million pounds annually during the next ten years. At the present time there are two large and many small producers in the field. Our ability to stay in the business depends upon our marketing a superior film,

under which condition, we should aspire to at least a 20 million pound annual volume. We should continue the polythene film venture without reservations and with the expectation of making it a success.

Packaging is an obvious outlet for polythene. This is a good place to start and, with our experience, an effective job can surely be done. It is expected that in addition polythene, by going into new uses, will supplement as well as replace cellophane to some extent. Polythene is finding outlets in certain areas of the fabric replacement market. The properties of polythene, however, are sufficiently unique to demand an aggressive search for other new markets, and research aimed at determining outlets and defining their problems should be undertaken independently of packaging development.

Research on new polythenes is proceeding in the Ammonia and Chemical Departments. Possible improvements in polymer, in the direction of greater stiffness, tenacity and higher yield point are not significant enough to delay the program of commercialization. The results of this work, however, should be applied to the films program with all possible speed in the hope of realizing a competitive advantage.

Within two years we should be selling the capacity of one extruder, approximately 5 million pounds annually. In five years the du Pont polythene film business may well be 10 to 15 million pounds. Eight men are now working on polythene in the Cellophane Research Section and current research expenditures are at the rate of approximately $200,000 a year. This is commensurate with the expected size of the business and, it is believed, sufficient for solving the problems to be faced in new markets. Market development work should be expanded to support this level of research effort and keep pace with production capacity. It requires a staff of several men. Production and sales development of polythene should be centralized in the Cellophane Division under one head as soon as the production unit is in operation.

Transparency is the most significant improvement that can be made in melt-extruded polythene. Such a film will expand outlets, especially in packaging, and, if we had it exclusively, the competitive advantage would be tremendous. A high-cost transparent film, made by solvent-casting, is now on the market. We are aiming at being the first to market a low-cost melt-extruded transparent film. By whatever method this is done, we should maintain an exclusive position as long as possible.

It should be borne in mind that polythene is an entering wedge in the new films field. Development work on polythene in new markets, even when unsuccessful, will define problems and guide research on other new film candidates.

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Polymer V

We are interested in Polymer-V in film form because, backed up by a strong patent position, it has a good combination of properties. Its chief asset is brilliant clarity unequaled as yet in any other melt-extruded film. Applications should capitalize on this exceptional appearance as well as water insensitivity, permanence of properties and re-use value.

Polymer-V is going along about as planned. Provision has been made for immediate supply of polymer for development work. Research on polymer preparation has proceeded along several lines and it is gradually being narrowed toward the ultimate method. Present estimates on film cost are higher than anticipated a year ago. Nevertheless we believe that if polymer volume is supported by a successful fiber business, a substantial market for film can be developed. We see no other film like "V" which is any cheaper. Stretched Polymer-V film appears stiff and strong enough to be useful as a very thin film, less than one mil thick, which will compensate to some degree for high polymer cost. Outlets for both stretched and unstretched Polymer-V film should be sought to obtain maximum production volume. Unstretched "V" in quantities sufficient for preliminary field investigations (2,000 lbs. a month) should be available for the Development Section by September 1949. Stretched "V" in similar quantities should be available during the early part of 1950. By January 1951 we should decide whether outlets for "V" film are sufficiently promising to warrant scale-up to a production unit. In addition to special uses in the packaging field, the properties of "V" indicate it should be useful in other specific markets. A few uses should be concentrated upon as quickly as the most promising ones can be selected. We suggest for consideration textile packaging, glass substitutes and the general field which capitalizes on the ability of amorphous Polymer-V when heated to melt and reset to a higher melting form. Phonograph records are an example of the use of this last mentioned property.

Ethylene/Vinyl Acetate (E/VA)

For two years E/VA film on which we have a good patent position has been considered our best prospect for the rapidly growing fabric replacement field on the basis of cost and properties, as measured on small samples of film. Except for polythene nibbling at the edges of this market we have no ready candidate available. We must move in fast if we are to gain a position while the market is growing.

The estimated selling price of E/VA film places it in a competitive position with vinyl films at current prices and there is a good chance of making E/VA a premium-quality film.

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Thin Films' Outlook

Research on the film has been delayed because working quantities of polymer have not been available. We are depending on the Ammonia Department to produce a polymer satisfactory for both melt-extruding and calendering. Their effort must be commensurate with the importance and urgency of this venture. It is hoped that the Belle Semi-Works will be making sufficient quantities of E/VA polymer for film process work by May and 3,000 to 5,000 pounds of film will be available for field work by January, 1950. In order to make E/VA film a success we believe it is necessary that the Ammonia Department supply sustained effort on polymer improvement. To this end the Ammonia Department should assign one or two research men exclusively to the job of assisting us in fitting the film to the demands of the fabric replacement market.

Hydrolyzed Ethylene/Vinyl Acetate (HE/VA)

HE/VA has been a prospective new films candidate for several years. The program on this film also has been delayed because polymer is not available from the Ammonia Department. HE/VA has a strong patent position and an unusually good combination of properties for packaging applications. Up until the time "V" came along, HE/VA was our only candidate for the tough films field. Present estimates on polymer cost are higher than anticipated and greater volume than that foreseen for film alone is needed to realize attractive costs. Under volume conditions HE/VA might be slightly cheaper than "V" film on an area basis.

In anticipation of a better volume and cost position in the future and to support the Ammonia Department efforts in this direction, when HE/VA polymer is available from the Belle Semi-Works, we should prepare melt-extruded film on a scale of approximately 2,000 pounds per month for a year and explore markets. A film like HE/VA in the price range of cellophane could conceivably take a large portion of the packaging market and there is a good chance of synthesizing such a polymer in a further exploration of the ethylene copolymer field.

Chlorinated Polythene

Chlorinated polythene has been considered for a fabric replacement film. For a large part of this market, it is superior to polythene in properties such as crease-resistance, softness and draping qualities. Chlorinated polythene, without a plasticizer, is quite like plasticized vinyl film.

Our present possibilities for a fabric replacement film are limited to chlorinated polythene and E/VA. The general properties of both films are quite similar. Although E/VA polymer

is in a much less developed state and consequently ultimate properties of the film are less well-known, we believe it is the stronger candidate primarily because of lower cost. The estimated selling price for E/VA film is less than chlorinated polythene by $0.08 per pound. On an area basis our sales price for chlorinated polythene film would be higher than the current price of vinyl film.

Chlorinated polythene will always be a high cost polymer. Investment costs on a chlorination plant are superimposed on a high permanent investment polythene plant. From a long-term viewpoint chlorinated polythene film is not a strong contender for the fabric replacement field. It may be worthwhile to take a look at chlorinated polythene while developing information on the fabric replacement market, but our efforts should be concentrated on E/VA and, as insurance against the possibility of E/VA proving inadequate, new ethylene copolymers, which do not require an additional processing step in manufacture, should be sought in a Chemical Department exploratory project.

S-Polymer

S-Polymer, an isobutylene-styrene copolymer manufactured by the Enjay Company, can be melt-extruded to form a film which is being promoted for packaging uses. It is in the polythene price range but because of limitations inherent in purchasing polymer outside the Company and because the film is weak in several important properties, it is suggested that no consideration be given to our manufacturing S-Polymer film.

Exploratory Research Program

As pointed out above, our foundation of market knowledge and the Company position in polymer research and production fits us uniquely to succeed in new films ventures. This means little unless we improve our ability to define and meet the future needs of the expanding films business. The necessity of increasing our market knowledge outside the packaging field has been indicated and the proposals, if followed, should equip us to exploit present candidates to the limit of their capacity.

The position of the Company to supply new candidates, while satisfactory for the present on specific types of polymers, is not adequate to meet probable future low-cost competition. Primarily the present commercial activities of the Company are centered on high pressure and condensation polymers. As far as

this course has carried us, the cost of our polymers is high. High pressure processes, as exemplified with polythene, HE/VA and E/VA, represent a high investment in manufacturing equipment - 45 to 50 cents per pound of polymer. Condensation polymers, for example, nylon and Polymer-V, involve the use of high-cost monomer ingredients. Work to lower costs with these processes is in the current program of the Ammonia Department, Chemical Department and the Pioneering Research Section, and this should continue. The field of ethylene copolymers, from the standpoint of properties and cost, has not been fully exploited for films and we recommend that the Rayon Department sponsor a project at the Chemical Department on this subject.

The above course alone, following the Company's traditional use of equipment and materials, is too narrow to insure our reaching a secure future position. There are reasonable prospects that competitive polymers will eventually sell for 25 cents a pound. As far as we know du Pont has no such prospect. As a matter of broad Company interest, which is logically a concern of the Chemical Department, we recommend that they undertake an exploratory project directed toward cheap film-forming polymers by any conceivable process.

Research Expenditures

The above recommendations require the addition of three or more men on polythene market development and one man in the Development Section on markets for other new films. One or two men in the Ammonia Department are needed on E/VA and one man should be assigned to exploratory ethylene copolymer research in the Chemical Department. One man in the Cellophane Research Section will be needed on scouting, coordination and follow-up work.

Polythene market development work will cost approximately $150,000 a year. By the time polythene production is turned over to the Cellophane Division research expenditures will be dropped to match this figure.

Following the remaining recommendations, new films research expenditures on an annual basis would be increased by about $15,000 in the Development Section; $20,000 to $40,000 in the Ammonia Department; $50,000 in the Chemical Department, and $125,000 (including $100,000 on polymer materials for field work) in the Cellophane Research Section.

These estimates do not include a project in the Chemical Department on new polymerization methods, which should be undertaken with vigor and followed through in whatever direction it leads.

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STATUS AND TRENDS OF THE INDUSTRY

Growth

The sales volume of non-fibrous thin films, represented chiefly by cellophane, has increased rapidly during the past 20 years. The high rate of growth is expected to continue. The sales history, shown graphically in Figure-I, is briefly summarized in Table-I.

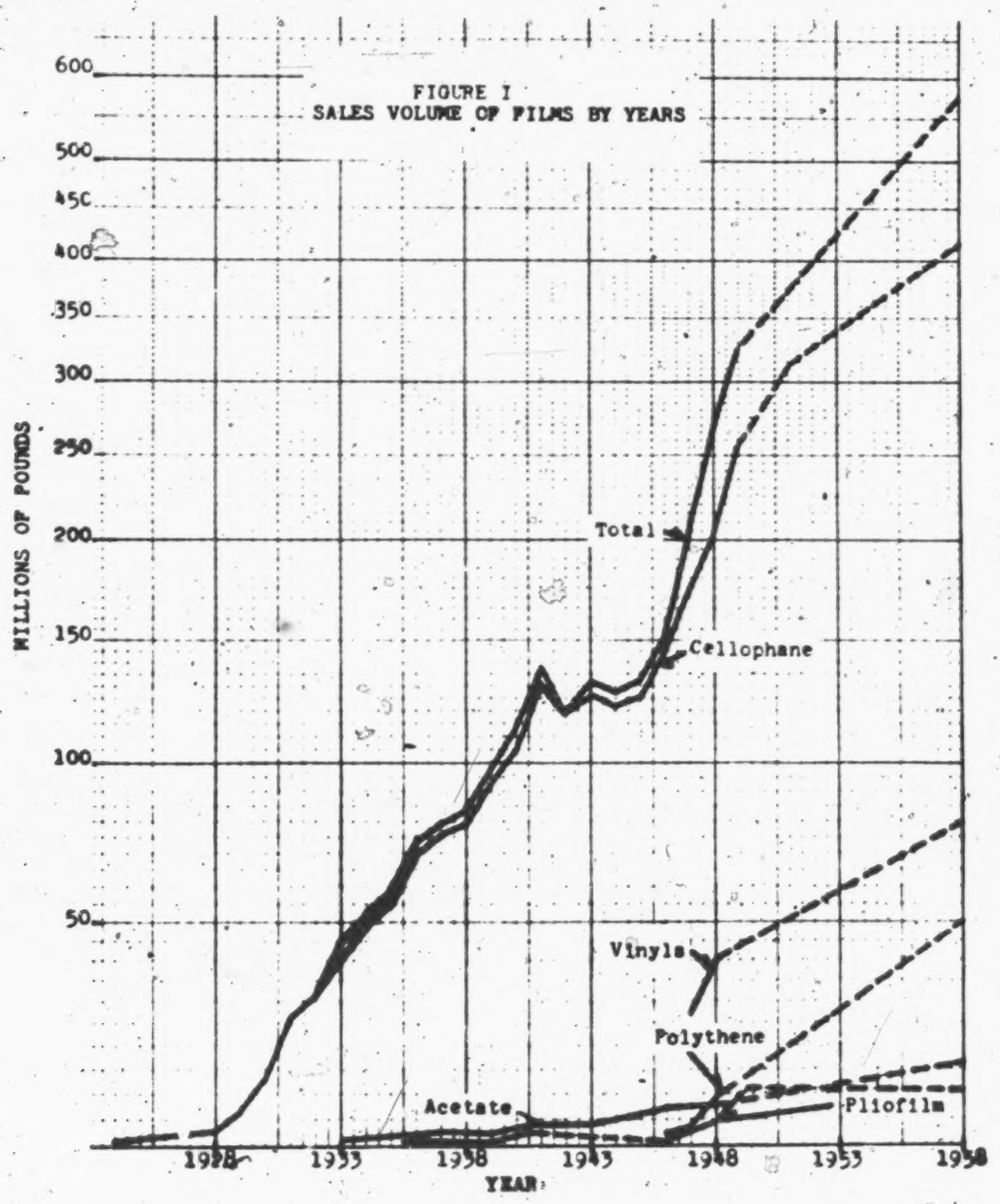

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Table-I

Annual Sales Volume in Pounds

	Ten Years Ago	Five Years Ago	Last Year	Forecast for Ten Years Hence
Cellophane	78,630,000	126,095,000	204,445,000	414,000,000
Cellulose Acetate	3,005,000	4,400,000	7,708,000	15,000,000
Pliofilm	1,000,000	No data	5,000,000	12,000,000
Polythene			8,000,000	50,000,000
Vinyls			40,000,000	80,000,000
Saran			Small	Small
Polyvinyl Alcohol			Small	Small
Polystyrene			Small	Small
Ethyl Cellulose			Small	Small
TOTAL	82,635,000	130,495,000	265,153,000	571,000,000

Estimates of the 1958 cellophane potential are believed to be reasonably accurate and are based on the assumption that present outlets will be filled, on an average, to 70% of their capacity. Estimates on other films are highly speculative and based on information obtained on polymer potential, film production capacity and guesses on growth of present outlets.

Data on the distribution of du Pont and Sylvania cellophane sales and a more detailed discussion of the growth and position of all commercial films are presented in Appendix-A, page 26.

Markets

The packaging market and the so-called "fabric replacement" market (household and industrial use) are the two major outlets for thin films. They are far from saturated.

The packaging market is dominated by cellophane which is expected ultimately to reach a volume of about 600 million annual pounds. There are some applications which require a film tougher than cellophane (better tear, flex and impact resistance) for example, in packaging frozen foods; heavy textile articles such as shirts, blankets, sheets, pillow cases, jackets; drugs and chemicals; hardware and metal goods. No other commercial film has successfully penetrated this area of the market because of inadequate properties or cost. Additional market research is needed to determine the size and requirements of the tough film market which should be large, certainly in the 100 million annual pound

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class. Requirements for films in the packaging market as determined by cellophane experience are discussed in Appendix-B, page 32.

The fabric replacement market is now dominated by vinyl films with polythene also being used to a considerable extent. In 1947 about 30 million pounds of film were used in this field. Last year about 46 million pounds were sold which amounts, on an average, to about four square yards of film for each family in the United States. This market is growing rapidly and will surely reach the hundred million annual pound class. A rough idea of the nature of this market may be obtained from the partial list of present and potential applications in Appendix-B, page 32.

Our information on the fabric replacement market is not on a par with that of the packaging market. We have not been exposed to the subtleties of the market. Requirements of films for fabric replacement, in qualitative terms, are summarized in Appendix-B, page 33. Additional research is needed to determine the size and more exact requirements of the market.

The electrical market is big but the low-cost materials now used are difficult to replace. It is estimated that at the present time more than 40 million pounds of paper and paper-resin, and over 30 million pounds of fabric and fabric-resin are used. The requirements of large volume outlets for cheap films are broad. Specialized applications represent small volume. It seems reasonable to predict that the use of films in the electrical field will increase to some extent, but the market is too indefinite to be an exclusive outlet for a new film. We should take what we can get whenever we can get it. Requirements of films for the electrical market are discussed in Appendix-B, page 33.

There are other markets for films, explored to a limited degree which may mature into outlets of considerable volume; for example in sound recording tape, phonograph records, storm windows and flexible glazing, wall covering, book covers, surface finishes for wood, metal and upholstered furniture and military applications. A more detailed discussion of these markets is given in Appendix-B, page 34.

In addition to the markets described, for any new film there should be "natural" outlets of unpredictable magnitude, based on unique inherent properties. An example of a "natural" outlet is the use of polythene film as a container for carbon black in tire manufacture where carbon with the container may be added directly to the rubber mix.

The potential annual volume for thin films is estimated at over 800 million pounds or from three to four times present size.

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POSITION OF DU PONT FILMS

Cellophane

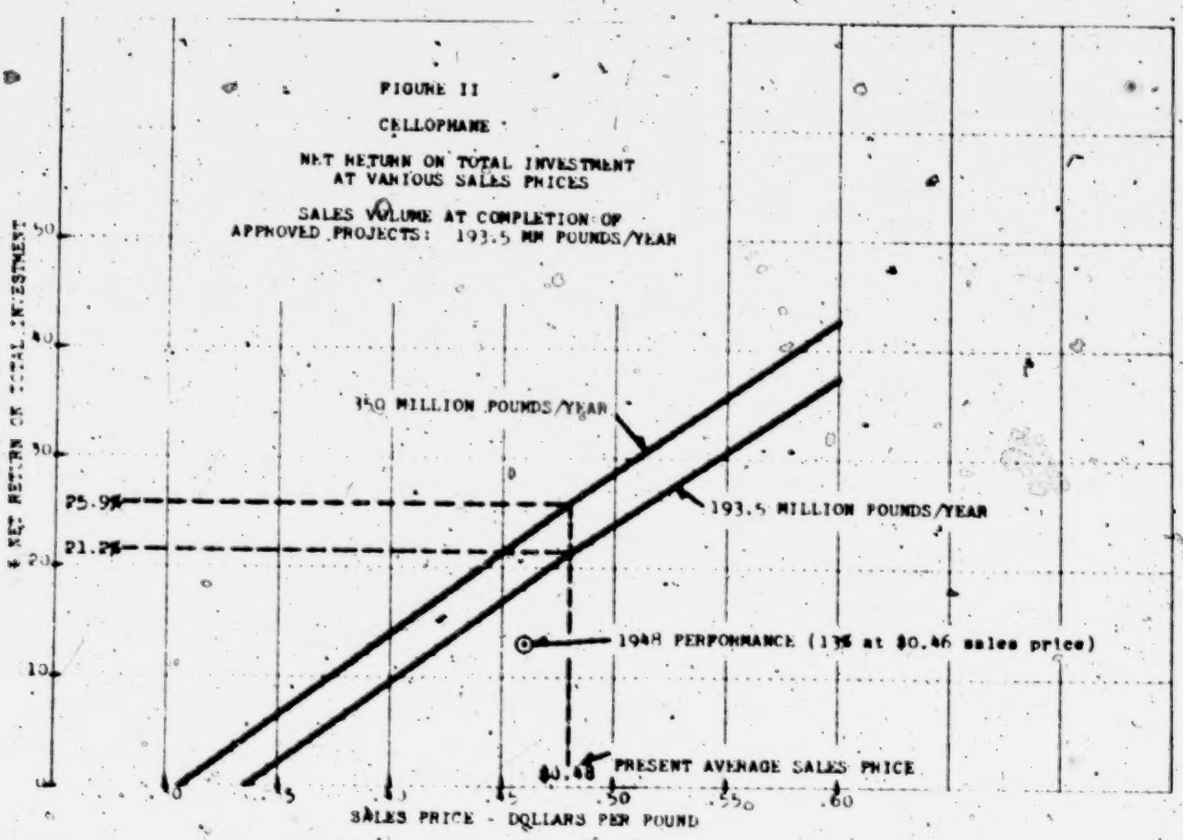
Cellophane has been successful because we have made it a versatile product by solving the problems encountered in the packaging trade. With continued technical support, cellophane may well continue the leader among transparent films. It is not a foregone conclusion that this position can be maintained indefinitely, however, because quite conceivably, cellophane could be displaced by a new film lower in price and having cellophane's virtues in one or more respects. Synthetic polymers are available now which produce films selling in the cellophane price range, though there is none yet known which for packaging purposes is equivalent to cellophane in both properties and cost. (See Appendix-C, page 35).

As a merchandising medium, cellophane has capitalized on transparency, protection, and low cost. As a barrier for packaging, moistureproof cellophane is really a combination of two films with unique properties, a cellulose base insensitive to organic solvents, waxes and greases, impermeable to gases and most odorous materials, with a nitrocellulose-wax coating impermeable to water. Versatility has been incorporated into cellophane by taking advantage of this structure in developing, within the confines of the cellophane process, specific ranges of properties, such as moistureproofness, to meet different requirements of the packaging market. This in no small measure has been responsible for the successful growth of the cellophane business. Packaging machinery designed for cellophane has reached a high degree of perfection and at the present time no other transparent film can be handled with an equal degree of efficiency.

In Appendix-D, page 36, cellophane applications are classified in terms of the degree to which the film is satisfactory. This does not include applications where cellophane has not been tried because it would obviously fail from a durability or moistureproofness standpoint. It is significant that over 95% of the cellophane now sold is in uses where performance is good.

Our cellophane manufacturing capacity by the end of 1949 will be about 193 million pounds annually. Forecasts indicate an increase in our annual production of 50 million pounds during the next ten years. Assuming an ultimate potential for all cellophane production of 600 million pounds, we should eventually increase capacity by an additional 100 million pounds, bringing the total du pont production to 343 million pounds. Both of these expansion steps can best be done at existing plant locations, by capitalizing on tested, but not completely developed, technical advances. These include improvements in the chemical building,

the use of double-sheet casting and the introduction of aqueous dispersion coating. We believe in the light of present knowledge this can be done without increasing permanent investment per annual pound. In Figure-II cellophane selling price is plotted against per cent net return on total investment at two levels of production: 193.5 and 350 million annual pounds. For details on cost calculations, see Appendix-E, page 39.



Broad patent coverage on the cellophane manufacturing process, including moistureproofing, no longer exists. Process improvements now in operation are covered by nine patents. A more detailed presentation of the patent position of cellophane and other films discussed in this report is given in Appendix-F, page 41.

The properties of cellophane which should be improved for better customer acceptance are sheet flatness, uniformity of thickness, durability, appearance, moistureproofness and coating adhesion. Research work to improve these properties, lower cost and develop new cellophanes for specific applications should continue. The program should be restricted to developments which will keep cellophane in its present price range.

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Cellulose Acetate

Cellulose acetate film is now manufactured by Celanese, Eastman Kodak and du Pont. It is used chiefly in laminations, as windows for envelopes and boxes and in other decorative uses where its brilliant transparency and dimensional stability are of value. High price ($0.75 vs. $0.47 a pound for cellophane) and poor durability rule it out as a serious contender in the packaging field. Although cellulose acetate has established firm markets, it is vulnerable to displacement by a lower-cost plasticizer-free, melt-extruded film. However, there is no lower-cost film in sight which is equivalent to cellulose acetate in appearance. It is expected that the cellulose acetate volume will not go beyond the 15 million pounds forecast for 1958. Last year du Pont sold 1,868,000 pounds. In order to have a more efficient and lower cost operating unit the addition of a second casting wheel in available space on the Spruance Plant would be a logical move. This expansion would increase our production to a total of about 3 million pounds annually.

POSITION OF OTHER COMMERCIAL FILMS

Calendered vinyl films, soft, crease-resistant and tough, now dominate the fabric replacement market and their use should increase. Instability on aging has been a problem with these films, due to the inherent poor stability of polyvinyl chloride and the use of migratory, liquid plasticizers. This difficulty has been overcome in part by the use of a butadiene-acrylonitrile rubber as the plasticizer. A new film of premium quality excelling in stability, crease-resistance, resiliency and weather-resistance should compete with vinyls in the fabric replacement field even at a higher price. At present the lowest selling price for calendered vinyl film is $0.60 a pound.

The vinyl films are attempting to enter the packaging market. A solvent-cast polyvinyl chloride-rubber blend has been phenomenally successful as a flexible pouch for oleomargarine although cost is high ($2.27 a pound). Other solvent-cast transparent, vinyl films have made little impression in the packaging field because of high cost.

Other commercial films (Pliofilm, ethyl cellulose, saran, Cry-O-Rap, polyvinyl alcohol, polystyrene) have little chance of moving into large volume outlets (see Appendix-A, page 28 for details.

PROSPECTS FOR NEW FILMS

There are good reasons for bringing new films on the market.

First, large and growing outlets exist which cellophane is not capable of filling. There is room for

(a) a low-cost, tough, water-insensitive transparent film with high water vapor permeability for packaging heavy textile articles or wet-goods, such as fresh produce and large meat-cuts,

(b) a low-cost, tough, transparent film with low water vapor permeability for packaging hardware, metal goods, drugs and chemicals,

(c) a premium-quality stable, tough, resilient "fabric replacement" film.

Second, diversification of our films business is desirable because -

(a) to keep healthy, cellophane, while still in the growing stage, should be forced into uses for which it is best suited,

(b) a well-balanced "family" of films, with a minimum overlapping of properties, will maintain a stronger sales position and give customers sound, economical service.

Third, it is advantageous to use available skills and knowledge to push into fields of related endeavor and we are better able than any other manufacturer now in the film business to furnish the research and market development support needed to make any new film a success.

Experience in the thin films business, reinforced by an analysis of the commercial position of films now on the market, leads to the conclusion that the following factors are important in selecting new film candidates.

As minimum essentials a new film must meet two specific requirements:

(1) Good film physical properties; better than existing films in at least one respect.

(2) Low cost; especially for a large volume market. A high cost film is probably destined for specialty outlets.

The following factors are important if a maximum degree of success in marketing a new film is to be realized:

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(1) All phases of film manufacture and applications in the field should be coordinated and integrated, including preparation of the polymer. This is necessary to insure uniformity of film quality, maintain versatility and expedite the orderly development of the film market.

(2) The necessary work must be done to modify the film for efficient operation on packaging machinery and in converting and fabricating processes. A flat sheet of uniform thickness with a surface treated to give good slip and eliminate static which performs well in heat-sealing and printing operations is needed.

(3) A "natural" use for the film should be selected, if possible, for an initial outlet, which takes advantage of unique and inherent properties and serves to create a preferred position in the field.

FILM-FORMING PROCESSES

Cost studies on film-forming methods indicate that melt-extrusion and calendering are lowest in cost and considerably cheaper than dispersion or solvent-casting. Comparative estimates on a pound basis are as follows (see Appendix-G, page 44 for details):

	Thickness in Mils	Excluding Cost of Polymer		Selling Price of Film (25% return) at Polymer Cost of $0.40/lb.
		Operating Cost	Permanent Investment	
Melt-extrusion	2	$0.09	$0.17	$0.66
	4	0.09	0.15	0.65
Calendering	4	0.10	0.21	0.69
Dispersion-Casting (Monomer process)	2	0.25	0.74	1.15
Dispersion-Casting (Polymer process)	2	0.26	0.83	1.20
Solvent-Casting	2	0.28	0.88	1.26

It is evident that, consistent with good film quality, melt-extrusion and calendering are preferred processes. We should continue the program to obtain more experience with these methods.

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NEW FILM CANDIDATES

Polythene

Polythene is the most promising newcomer in the thin films field. It is a soft, limp film superior to cellophane in durability, especially at low temperatures and is permanently moistureproof, chemically inert, stable, free from odor, taste and toxicity.

Polythene will undoubtedly become an important film in the packaging field. Because of limpness, more difficult operation on packaging machines and greater permeability to odorous organic materials, it should have no appreciable effect on the over-all position of cellophane. Used alone or laminated to paper or metal foil, polythene is opening up new packaging uses or filling the gap where cellophane has failed from a durability or moistureproofness standpoint. Such uses are in the packaging of frozen foods, metal parts, small hardware articles, chemicals, and in intra-plant packaging (packaging of parts in an assembly plant for protection and identification during handling and storage).

Melt-extruded polythene has a place in the fabric replacement market and is satisfactory for many uses such as closet accessories, bowl cover , suit bags, small pouches, and tablecloths. Polythene is cheaper but inferior to calendered vinyls in applications such as curtains which require good crease-resistance and draping qualities. Polythene is being used successfully to replace Holland cloth in the rubber industry.

A small market is foreseen for polythene in the electrical field (estimated potential about 300,000 pounds of film a year).

New applications should develop for polythene which take advantage of its unique, inherent properties, particularly chemical inertness and low temperature durability.

A low-cost transparent polythene will greatly expand uses, especially in the packaging field. If we can produce such a film and maintain an exclusive porition it would give us a tremendous competitive advantage. The haze in ordinary film is the result of a rough surface, formed during the extrusion process. Work is in progress in the Cellophane Research Section to eliminate haze by a hot-pressing after-treatment and by compounding with waxes. The possibility of obtaining a polymer which will extrude directly as a transparent film should be thoroughly explored with the Ammonia and Chemical Departments. All efforts should be made to develop an exclusive position on a transparent film.

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The 1958 sales forecast for polythene of 50 million pounds is detailed in Appendix-A, page 27. It is believed our share of this business can be 20 million pounds. Our experience in producing and marketing thin films should enable us to excel in film quality (for example, uniform gage and good surface properties) and to solve successfully the problems which arise in field applications (for example, packaging machine performance, heat-sealing and gluing problems).

The present selling price range of polythene film, depending upon width and quality, is $0.73 to $1.35 a pound. We are selling polythene, 1-1/2 mil thick at $0.85 a pound and 2 to 4 mils thick at $0.80. Polythene, with a density two-thirds that of cellophane, now sells on an area basis in the cellophane price range.

Cost estimates on a 10 million pound annual capacity polythene melt-extrusion plant (new construction), with a film selling price at 25% net return on total investment are as follows:

	1 Mil Film	2 Mil Film
Permanent Investment, Ammonia Dept.	$0.47	$0.47
Permanent Investment, Rayon Dept.	0.21	0.17
Working Capital, Rayon Dept.	0.10	0.09
Total Investment	0.78	0.73
Selling Price	0.69	0.66

The price possibilities for polythene film are limited by a high permanent investment in the Ammonia Department. It is also interesting to note that a large proportion of Rayon Department investment is in working capital.

In Figure-III estimated selling price is plotted against per cent net return on total investment for 2 mil polythene film production at 10 million and 50 million pound levels. Further details on cost are given in Appendix-H, page 47 to 51.

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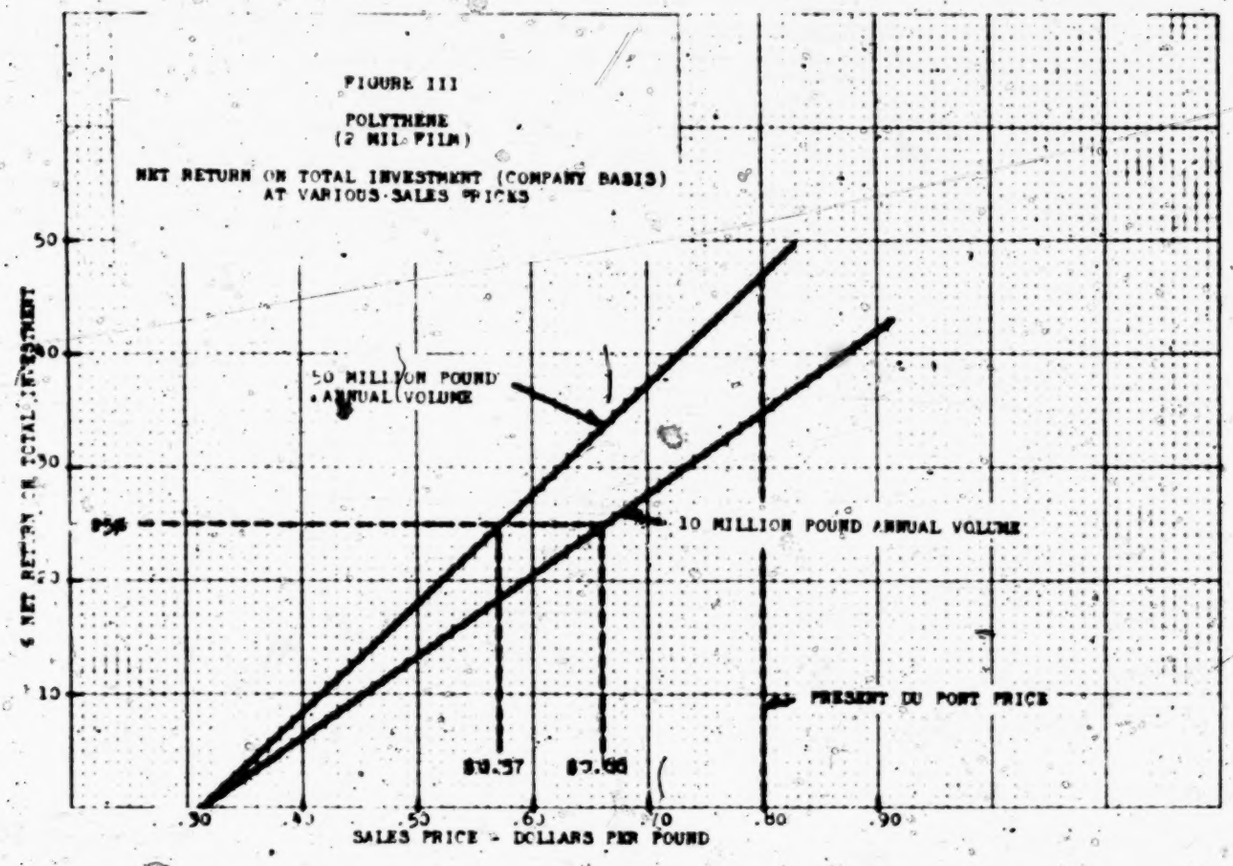

From the standpoint of properties and cost, polythene appears to be a sound addition to the cellophane film line. We should move ahead with polythene as rapidly as possible maintaining the lead on film quality.

Polymer-V

Melt-extruded Polymer-V film, without a plasticizer, is water-insensitive, moderately moistureproof, stiff, transparent and brilliantly clear.

Unstretched "V" has low impact resistance, but after stretching impact resistance is greatly improved and a film is obtained with good physical properties (see Appendix-I, page 52 for properties of Polymer-V and other films discussed in this report).

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Applications for Polymer-V film must capitalize on this combination of properties, emphasizing good appearance. V-film may find outlets in the packaging, lamination, electrical, sound-recording tape and phonograph record fields.

One of the most interesting possibilities for "V" is in the very thin films field because it is probably stiff and strong enough to be useful in thicknesses of less than one mil. This will compensate to some extent for high polymer cost.

Indications are that unless "V" is successful as a fiber, the selling price of film will be very high, about $1.00 a pound for one mil film. The following selling price estimates (25% return on total investment) on a 10 million pound annual volume of Polymer-V film are based on the assumption that polymer raw materials would be at the 35 million pound level.

	Film Thickness Mils	Selling Price Pound	Selling Price Thousand Sq.In.
Polymer-V, unstretched	0.5	$0.92	$0.023
	1	0.85	0.041
	2	0.83	0.081
Polymer-V, stretched	0.5	0.92	0.024
	1	0.85	0.042
	2	0.83	0.083
Moistureproof Cellophane	1	0.47	0.022
Cellulose Acetate	1	0.75	0.034
	2	0.93	0.085

On an area basis, with 1 mil film, the sales price of Polymer-V film is almost twice that of cellophane and 50% more than cellulose acetate; with 2 mil film, "V" will sell at the same price as acetate. Again comparing on an area basis 1/2 mil "V" will sell at about the same price as 1 mil (300 gage) cellophane.

Further details on estimated costs of Polymer-V and other film candidates discussed in this report at 10 million and 50 million pound annual production levels are given in Appendix-H, page 50 and 51.

Both unstretched and stretched Polymer-V film should be taken to the field as soon as each one is available from Semi-Works. It is believed that unstretched "V" will be available in quantities of approximately 2,000 pounds a month about September 1949, and stretched "V" in similar quantities during the early part of 1950.

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Hydrolyzed Ethylene/Vinyl Acetate (HE/VA)

HE/VA (3:1 ethylene:vinyl acetate ratio), may be formed into film by melt-extrusion, calendering, or solvent-casting. Melt-extrusion is the preferred method. HE/VA with no plasticizer is stiff like cellophane, transparent, high softening, tough, stable, weather-resistant, moderately moistureproof, and has an unusually good combination of properties for packaging applications.

Like Polymer-V, HE/VA film appears strong and stiff enough to be useful in thicknesses of less than one mil.

HE/VA is an Ammonia Department product on which there is a strong patent position. The present estimate on cost of the polymer from a new 10 million pound plant is 68¢ a pound. A high area factor compensates in some measure for high polymer cost and it is interesting to note that on a 10 million pound film plant basis, the selling price (25% return on total investment) of HE/VA is slightly lower than Polymer-V film.

	Film Thickness Mils	Selling Price Pound	Selling Price Thousand Sq. In.
HE/VA	0.5	$1.09	$0.020
	1	1.02	0.038
Polymer-V, stretched	0.5	0.92	0.024
	1	0.85	0.042
Moistureproof Cellophane	1	0.47	0.022

The Ammonia Department is developing a Semi-Works process for HE/VA. A melt-extrusion process for film is not yet worked out. This should be done as soon as polymer is available from the Belle Semi-Works.

Ethylene/Vinyl Acetate (E/VA)

E/VA film (approximately 10:1 ethylene/vinyl acetate ratio) is soft, pliable, tough, and requires no plasticizer. Properties may be modified to a considerable degree by varying the ratio of ethylene to vinyl acetate. Based on a limited amount of experimental data, E/VA appears to have excellent possibilities as a fabric replacement film. There may be more than one film from the E/VA system for different applications in this field.

E/VA is an Ammonia Department product with a strong patent position. The present estimate of the cost of polymer from a new 10 million pound plant is 45¢ a pound. The estimated selling

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price of film (25% return on total investment) from a plant with 10 million pounds annual capacity, compares with polythene and the present price of vinyl film as follows:

	Film Thickness Mils	Selling Price Pound	Selling Price Thousand Sq.In.
E/VA, melt-extruded	2	$0.73	$0.053
	4	0.72	0.104
Polythene, melt-extruded	2	0.66	0.044
	4	0.65	0.086
Vinyl film, calendered	4	0.60	0.113

The Ammonia Department is now attempting to prepare Semi-Works quantities of E/VA of suitable quality. It is expected that 100-pound lots of polymer will be available by May 1949, for melt-extrusion and calendering process work. Polymer for film should be available in quantities of two thousand pounds a month by August 1949.

Chlorinated Polythene

Chlorinated polythene polymer has been worked on by both the Plastics and Ammonia Departments. The Plastics Department process, now in the semi-works stage, involves chlorination of an aqueous dispersion of polythene; in the Ammonia Department process polythene is chlorinated in a carbon tetrachloride solution. The properties of chlorinated polythene from the two processes are entirely different as indicated in Appendix J, page 53. At the same chlorine content the Ammonia Department polymer is softer and, in general, has less attractive properties.

The Plastics Department product has been taken out into the field and several extruders, especially Visking, are interested in promoting it for fabric replacement and cooked meat packaging applications. The general reaction of the trade has been that it has good commercial prospects if the cost is no higher than vinyl film. Chlorinated polythene requires no plasticizer and is superior to vinyl films in permanence of properties. In crease-resistance it is superior to polythene and inferior to vinyl films. Stability of the polymer presents a problem during melt-extrusion, but the Plastics Department states suitable stabilizers have been found.

Our present possibilities for a fabric replacement film are limited to E/VA and chlorinated polythene. Neither polymer is in commercial production. In general properties the two films are quite similar, except that E/VA is more rubbery and has higher

elongation and lower tear strength. Typical data, comparing the two films, are given in Appendix-J, pages 54 - 55.

Chlorinated polythene will always be a high cost polymer. Investment costs on a chlorination plant are superimposed on a high permanent investment polythene plant. The estimated selling price of film (25% return on total investment) from a 10 million pound plant, using Plastics Department polymer containing 27% chlorine, compares with E/VA as follows:

	Film Thickness Mils	Selling Price Pound	Selling Price Thousand Sq.In.
Chlorinated Polythene, Melt-extruded	2	$0.81	$0.064
	4	0.80	0.127
E/VA, melt-extruded	2	0.73	0.053
	4	0.72	0.104
Vinyl film, calendered	4	0.60	0.113

At 50 million pound production levels there is a $0.17 a pound difference in selling price in favor of E/VA (see Appendix-H, page 51).

Considering the cost angle, from a long-term viewpoint, chlorinated polythene film is not a strong contender for a permanent place in the fabric replacement field. E/VA or some new ethylene copolymer which does not require an additional processing step in polymer manufacture has better prospects.

S-Polymer

The Enjay Company (Standard Oil of N.J.) is marketing an isobutylene-styrene copolymer (S-Polymer) and suggesting its use as a film-former. It can be melt-extruded and calendered. Claims have been made that this film will be the "successor to cellophane".

Two grades of S-Polymer are available, S-50 and S-60. Film from S-50 is very low melting and tacky at room temperature and is of no interest as a melt-extruded thin film. It might be calendered into thick films with better properties although one would guess it would be inferior to vinyl films.

Except for low impact resistance and low softening temperature S-60 polymer film has good properties. In durability properties it is inferior to polythene. Probably S-60 film could be treated to prevent its sticking together at normal temperatures

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but, it is believed, efficient operation on wrapping machines would be very difficult to attain. As a low cost material for compounding with other polymers, the S-Polymers merit attention.

S-Polymer is currently offered at 44¢ with an expected ultimate price of 30¢ to 35¢ a pound. On an area basis at both present and ultimate film prices, polythene and S-Polymer are equal; at 44¢ for S-Polymer, 1 mil film would cost about the same as 300 gage (1 mil) moistureproof cellophane. Estimates of film selling price in Appendix-C, page 35, are based on a polymer cost of 44¢ a pound.

S-Polymer does not seem to be a good film candidate for us because of limitations inherent in purchasing polymer outside the Company and because the film is weak in several important properties.

Time Schedule

The present time schedule on new film candidates is given in Appendix-K, page 56.

Exploratory Research Program

Exploratory work on new films should be directed toward synthesizing low-cost, melt-extrudable polymers for fabric replacement films and tough packaging films. There is a scarcity of good new candidates.

Although the present position of the Company is satisfactory on certain specific types of polymers, it is not adequate to meet probable future low-cost competition. Primarily our present commercial activities are centered on high pressure and condensation polymers and as far as this course has carried us, cost is high. High pressure processes represent a high investment in manufacturing equipment - 45 to 50 cents per pound of polymer. Condensation polymers, for example, nylon and Polymer-V, involve the use of high-cost monomer ingredients. Work to lower costs with these processes is in the current program of the Ammonia Department, Chemical Department and the Pioneering Research Section. The field of ethylene copolymers, from the standpoint of properties and cost has not been fully exploited for films and this should be a fruitful field for investigation. Such a program should be done in the Chemical Department with the Ammonia Department ready to undertake manufacture of promising candidates.

A program on ethylene copolymers, polyesters and polyamides is too narrow to insure our reaching a secure future position. There are reasonable prospects that competitive polymers will eventually sell for 25 cents a pound. As far as we know du Pont has no such prospect. We believe the Chemical Department

should undertake an exploratory project directed toward cheap film-forming polymers by any conceivable process.

Research Expenditures

The foregoing recommendations require additional manpower on new films as follows:

Rayon Department	
Cellophane Research	1
Development Section	1
Polythene Sales Development	3+
Ammonia Department	1+
Chemical Department	2+

Polythene market development work will cost approximately $150,000 a year. By the time polythene production is turned over to the Cellophane Division research expenditures will be dropped to match this figure.

Following the remaining recommendations, new films research expenditures on an annual basis would be increased by about $15,000 in the Development Section; $20,000 to $40,000 in the Ammonia Department; $50,000 in the Chemical Department, and $125,000 (including $100,000 on polymer materials for field work) in the Cellophane Research Section. These estimates do not include a project in the Chemical Department on new polymerization methods.

A list of active research projects in the Rayon, Chemical and Ammonia Departments, specifically on or related to new films is given in Appendix-L, pages 57 - 59.

ACKNOWLEDGMENT

The assistance of the Trade Analysis, Planning, Sales Technical and Acetate and Polythene Films Sections of the Cellophane Division; the Development and Pioneering Research Sections of the Technical Division; the Ammonia, Development, Photo Products and Plastics Departments in preparing this report is gratefully acknowledged.

Sources of published information are indicated in Appendix-M, pages 60 - 61.

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APPENDIX-A

THE GROWTH AND POSITION OF COMMERCIAL FILMS

Cellophane

Cellophane sales in 1924 were approximately one-half million pounds. In 1928, the first full year of moistureproof production, sales were over three million pounds. Since then production has steadily increased until in 1948, du Pont sold 160 million pounds. In 1931, The Sylvania Industrial Corporation (now The Sylvania Division of American Viscose Corporation) entered the cellophane field. Their sales too have shown a steady growth, although at a lower rate than du Pont to reach 44 million, making a total for du Pont and Sylvania in 1948 of 204,445,000 pounds. Cellophane sales leveled off during the war period (1941-1945) because of the restricted availability of raw materials. Forecasted sales for cellophane (du Pont and Sylvania) for 1949 are 248 million pounds. Sylvania is undertaking a major plant expansion and in 1951 it is expected that out of a 300 million pound market, du Pont will produce two-thirds and Sylvania one-third. Estimates made by the Cellophane Division indicate that in 1958 the cellophane sales volume will be 414 million pounds of which du Pont's share is expected to be 243 million, or 59%.

Cellophane is limited in packaging applications chiefly from the durability standpoint. Last year about seven million pounds of cellophane were used in double-wall bags to meet durability or moistureproofness requirements. Cellophane is a "one-use" wrap.

In the electrical field cellophane finds limited use as a separator, barrier and marker tape in insulating structures.

Cellulose Acetate and Acetate-Butyrate

Cellulose acetate was the second transparent film to appear on the horizon in 1932. Eastman Kodak introduced cellulose acetate-butyrate as an adjunct to their line. The growth of acetate film has been steady but not spectacular. Sales, including acetate-butyrate, rose to about seven million pounds in 1945 and has held at seven to eight million the last three years. Celanese is expanding facilities; Eastman while favoring acetate-butyrate is giving way in the thin films business. Total sales forecasted for 1949 are eight million pounds. Further growth is limited, although it is expected the total market will reach 15 million pounds by 1958 with du Pont continuing to have 20% of the business. It is estimated that Eastman's production of acetate-butyrate is now approximately 900,000 pounds a year.

Lamination to metal foil and paper products represents the chief outlet for acetate film. Other uses are in windows for

envelopes and boxes, sealing tapes and, in electrical applications, for wire wrapping and as a condenser dielectric. About 20% of the uses (less than two million pounds per year) are competitive with cellophane in the packaging field.

Cellulose acetate-butyrate is sufficiently superior in flexibility and durability to replace the acetate, even at higher cost, in wire wrapping (electrical) and pipe wrapping (corrosion protection) and glass substitute (flexible glazing) applications.

Approximately one and a half million pounds annually of acetate and acetate-butyrate are used in the electrical field as wrapping tapes.

Polythene

Polythene film has been on the market in substantial quantities since 1946 when two million pounds were sold. Sales jumped from three million pounds in 1947 to eight million pounds in 1948. The forecast for 1949 is 12 million and for 1958 is 50 million pounds. Du Pont's share is estimated at four million in 1950; ten to fifteen million by 1953; and twenty million by 1958.

A breakdown of the 1958 sales forecast for polythene film, assuming that expected improvements in properties are obtained, is as follows:

Market	Millions of Pounds
Not Competitive With Cellophane	
Chemical and drug packaging	6.0
Rubber Industry	5.0
Food and machine parts packaging	8.0
Textiles - fabric replacement and textile wraps	10.0
Competitive With Cellophane	
Food Products	14.4
Textiles	0.5
Jobbers	5.0
Miscellaneous	1.4
TOTAL	50.3

Reynolds Metals Company is the only producer now marketing a transparent polythene film. It is made by a solvent-casting process and sells for $1.02 a pound.

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Pliofilm

Pliofilm (rubber hydrochloride) was introduced by the Goodyear Tire and Rubber Company in 1935. In the first year 100,000 pounds were sold. Sales increased to two million pounds in 1939 and remained at this level through 1947 with the exception of the war years (1942-1945) when larger quantities were used for packaging war equipment. Pliofilm sold five million pounds in 1948. The forecast for 1949 is nine million with a possible expansion by 1958 to 12 million.

The attractive properties of Pliofilm are transparency, permanent moistureproofness, liquid resistance, and fair durability, except for poor shock resistance particularly at low temperatures. Aging characteristics and heat-stability are poor.

Pliofilm has made slight inroads in the food packaging field, partially at the expense of cellophane. Its performance is good on dried fruits, greasy foods such as nuts and popcorn, coffee, and meat loaves. Efforts to enter the cheese field have not been successful. It is too moistureproof for most fresh vegetables. Because of inferior durability, it has been replaced by the more expensive vinyl-rubber film in the margarine bag. Pliofilm, as well as cellophane, is losing ground to polythene in the frozen food field. It has lost out completely to vinyls in the fabric replacement market.

On an area basis, Pliofilm costs about one-third more than cellophane. About 80% of the output is sold through film converters. Irregular quality has forced the cost of bags and printed film up to from two to four times that of cellophane. It will not run well on cellophane machines and although considerable effort has been put into it, efficient high-speed packaging equipment is not yet developed for Pliofilm.

There are no apparent markets for Pliofilm outside of the packaging field. Its position appears vulnerable to new melt-extruded films. Made by solvent-casting, there is probably little room for price reduction. If the cost of rubber should decrease as much as 10¢ a pound it might reduce the price of Pliofilm about 6¢ a pound which on an area basis would still make it more expensive than polythene. In the light of this discussion the 12 million pound annual volume forecast for Pliofilm by 1958 may seem unrealistic. However, this forecast is based on the estimated production capacity of Goodyear and the probable short supply of cellophane. When the film market is saturated Pliofilm volume will probably decline.

The selling price of Pliofilm in thicknesses of 1, 1.2 and 1.4 mils is given in Appendix-C. Thinner films are being sold and the lightweight tensilized variety is used for hand wrapping

of cheese. Price quotations as of February 14, 1949 for the lightweight varieties are as follows:

Thickness in Mils	Area Factor Thousand Sq. In. Per Lb.	Price Per Lb.	Price Per Thousand Sq. In.
0.2 (tensilized)	100	$1.70	$0.017
0.4 (tensilized)	55	1.35	0.025
0.75	31	.95	0.031

Vinyls

Vinyl polymer films, particularly the calendered variety, are showing great vitality. Film sales in 1947 were 27 million, and in 1948 were 40 million pounds. The forecast for 1949 is 45 million. About 15% of the total vinyl resin production today is going into thin films. As a guess vinyl film sales in 1958 will be 80 million pounds. At the present time the lowest selling price of vinyl film is $0.60 a pound. The ultimate price is estimated at $0.47, assuming a decrease in cost of polyvinyl chloride resin from $0.33 to $0.25 a pound with a proportionate lowering in plasticizer cost.

For the most part, in the past, odorous migratory liquid plasticizers were used which produced films with limited stability. This difficulty has been overcome by plasticizing with a butadiene-acrylonitrile rubber. Solvent-cast film from the polyvinyl chloride-rubber blend, 3 mils thick, has entered the packaging field as a flexible pouch for oleomargarine. Here it has been a phenomenal success, unable to meet demands, selling two million pounds in 1948. From a quality standpoint it will hold this outlet against present competition although repeal of the Federal tax on colored margarine would limit its use to States retaining the tax. Should the margarine outlet fail, undoubtedly this film will find use, limited by its cost, in the packaging field. Visking is now promoting applications for other foods, particularly cheese, fats, meat loaves and wet foods. Vinyl-rubber film now sells for $2.27 a pound.

Vinyl film is competing with cellophane in a minor way as a plastic molding assistant in the low pressure lamination field.

Polyvinyl Alcohol

Polyvinyl alcohol is a tough, water-soluble film made by casting from a solution in water. Many of its properties vary considerably with changes in moisture content. The market for this film was analyzed by du Pont in the period 1941-47 by producing and selling three-quarters of a million pounds of film at a

price of $1.00 to $1.60 a pound. It was abandoned for lack of apparent stable uses. Polaroid now looks like a small specialty outlet. In the fabric replacement field, and as a backing in embroidery lace manufacture, polyvinyl alcohol has been replaced by better materials. Polyvinyl alcohol is better than cellophane as a plastic molding assistant in low pressure laminating but higher cost limits its use.

Reynolds Metals Company, with a present capacity of 200,000 pounds per year, is selling polyvinyl alcohol film at $1.62 per pound.

Saran and Cry-O-Rap

Small quantities of saran film have been marketed since 1941. Saran film and Cry-O-Rap bags (vinylidene chloride polymers) have the best moistureproofness by several-fold of any films on the market. Chiefly of interest in the packaging field, they are competitors with cellophane and Pliofilm although high cost, influenced in some degree by difficulties with heat-sealing and poor operation on wrapping machines, is limiting their use to fringes of the business. High price will limit outlets to specialty uses requiring low moisture permeability.

Ethyl Cellulose

With properties similar to and only slightly better than cellulose acetate, ethyl cellulose has been a failure in the thin films field because of high cost. The status is expected to remain unchanged.

Polystyrene

A small quantity of tensilized polystyrene (Polyflex) is being sold by the Plax Corporation. Polystyrene even in tensilized form is a brittle film. Its present high cost, $2.00 a pound for 1 mil film and $1.05 a pound for 2 mil ($0.08 per thousand square inches) indicates that it will continue to be a specialty film with few outlets beyond its present limited use in the electrical field as a condenser dielectric.

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APPENDIX A (Cont'd)

GROWTH OF THIN FILM SALES
(Annual Volume Pounds - 000's Omitted)

Year	Cellophane DuPont	Cellophane Sylvania	Cellophane Total	Cellulose Acetate	Polythene	Pliofilm	Vinyls
1924	521	-	521				
1925	1,007	-	1,007				
1926	1,741	-	1,741				
1927	2,005	-	2,005				
1928	3,083	-	3,083				
1929	5,836	546	6,292				
1930	12,630	440	13,070				
1931	24,971	2,850	27,821				
1932	27,652	4,400	32,052				
1933	33,079	6,610	39,689	265			
1934	38,819	9,200	48,019	486			
1935	43,427	11,537	54,964	730		100	
1936	54,817	14,536	69,453	1,851		330	
1937	60,424	15,650	76,074	2,620		700	
1938	61,498	17,132	78,630	3,005		1,000	
1939	73,746	19,462	93,208	3,651		2,000	
1940	81,660	22,113	103,773	3,971		2,500	
1941	104,762	27,700	132,462	4,519		2,750	
1942	87,489	28,500	115,989				
1943	97,095	29,000	126,095	4,400			
1944	93,973	28,088	122,061	5,000			
1945	95,600	28,500	124,100	7,000			
1946	106,376	35,000	141,376	7,650	2,000	1,250	
1947	131,974	38,500	170,474	7,257	3,200	2,500	27,000
1948	160,445	44,000	204,445	7,708	8,000	5,000	40,000
1949	(188,000)	(67,000)	(255,000)	(8,000)	(12,000)	(9,000)	(45,000)
1951	(200,000)	(110,000)	(310,000)				
1958	(243,000)	(171,000)	(414,000)	(15,000)	(50,000)	(12,000)	(80,000)

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APPENDIX-B

MARKETS

Requirements for Films in the Packaging Market

The market today demands a low-cost film with an attractive appearance. Cost on the package, which involves efficient operation on wrapping machines, is a critical factor. Sufficient stiffness to give "crisp" package appearance is needed. Transparency, by promoting sales appeal, is usually an advantage and in many applications is a requirement. Sufficient durability for the intended use is necessary. Moisture impermeability is usually desired or, if not, at least waterproofness. Stability of film properties is important. Freedom from odor, toxicity, and usually taste are required. Film thicknesses of one to two mils are usually used. Little or no re-use value is required; cellophane, for example, is strictly a "one-use" wrap. Re-use value may be important in packaging applications requiring a tough film.

Fabric Replacement

"Fabric replacement" is somewhat of a misnomer. Many outlets under this category do represent replacement of fabrics with films, some because of lower cost, others because of superior properties. There are, however, a number of applications where films have not been previously used. "Household and industrial use" is a more descriptive name for this market.

The extent of the market is indicated by the following partial list of present and potential applications.

Household Uses

- Window drapes
- Shower curtains
- Table covers
- Bed sheets, pillow covers
- Closet accessories
- Bowl and appliance covers
- Yard goods
- Furniture covers
- Lampshades

Outdoor Uses

- Camping equipment
- Awnings
- Outdoor furniture
- Automobile top covers

Clothing

- Rainwear
- Umbrellas
- Baby pants and bibs
- Aprons and smocks
- Make-up capes
- Coat liners

Industrial

- Holland cloth replacement
- Liners (rubber industry)
- Lampshades
- Tapes & light machine belting
- Plastic molding assistants
- Equipment covers
- Protective garments
- Hospital sheeting
- Pouches

Requirements for Films in the Fabric Replacement Market

Qualitatively, reasoning by analogy from fabric properties, the following film properties are desirable.

A durable film with a long useful life is needed. In contrast to a packaging film, such as cellophane, a service life of months or years, depending upon the severity of the conditions of exposure, is required. Other film properties needed are good drape, soft dry hand, a sufficient resiliency to recover original dimensions after light stretching, toughness (good impact, flex and tear resistance), sewability, heat-sealability, attractive appearance (pigmented, colored, printed, embossed and in some cases transparent films are desired - 50% of the vinyl films now produced are colored or pigmented), stability, and freedom from odor, toxicity, and taste. Flame-resistance is desirable. Film thicknesses of two to five mils are usually used.

Requirements for Films in the Electrical Market

In the electrical field, water-insensitive films find use as insulating tapes for wires and cables, in laminated structures as slot insulation, and as the dielectric in condensers. For insulation a tough, flexible film with high dielectric strength (above 1,000 volts/mil) and low power factor is desired. For most direct insulation uses, film-wrapped wire cannot compete with enamel-covered and extruded plastic-covered wire. Film is useful for joints and mends and is also used as a separator, barrier and outer sheath for cheap insulating compositions. Very thin films (one mil and less) are required for condensers with as high a dielectric constant as possible (above 4.5 desired), moderately high dielectric strength (above 300 volts/mil) and low power factor (less than 1%). A high softening temperature and no cold flow are desired for any electrical use.

High softening specialty films may find uses in radio, television and electric motor construction. The electroplating industry uses some vinyl film as a masking tape in plating operations and is interested in a more durable sheet than rubber for tank linings.

Other Markets

Paper and cellulose acetate are now used as a base for magnetic sound-recording tape. The Photo Products Department estimates that a more durable plastic film has an annual market potential of over 300,000 pounds. At a low enough cost, a new film might take some of the paper business, which amounts to about three million pounds.

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At the present time, about 100 million pounds of phonograph records are molded each year. An increasing proportion of this volume is using vinylite resin. A five mil film with better abrasion resistance might find use in a laminated structure which if it captured one-fifth of the market, would amount to over one million pounds annually.

A stable, durable, transparent film should be attractive for making lightweight, compact, indoor storm windows. This market would require developing and no attempt has been made to estimate its potential. Cellulose acetate and acetate-butyrate is now laminated to scrim fabric and metal screening to make flexible glazing for farm use. (Probable annual potential 1,000,000 lbs. of film.) A tougher film should extend this type of application.

The present efforts of cellulose acetate to enter the wall covering field are hampered by high cost. No attempt has been made to estimate the size of this market.

A film with good abrasion resistance might find use as a surface finish for wood, metal and upholstered furniture. In some applications a thermosetting film is desired. The vinyl films are now making slight inroads into this field.

Cellulose acetate laminated to paper is now used for flexible book covers. A tougher, more stable film should extend this application.

The military market for thin films has not been investigated. The chief specification calls for films with good low temperature properties. In this respect, polythene is the best film known. In continuing a study on markets, military applications in peace and war should be considered.

APPENDIX-C

FILMS COST - BY WEIGHT AND AREA

Film	Process*	Thickness in Mils	Area Factor Thousand Sq. In. per Lb.	Cost Per Pound	Cost per Thousand Sq. In.
Cellophane, Moistureproof		)	21.0	$0.47-0.64	$0.022-0.034
" "		1.-	14.0	0.48-0.64	0.034-0.047
Polythene	ME	1.0	30.0	0.73-1.45	0.024-0.048
"		1.5	22.5	0.73-1.35	0.032-0.060
"		2.0	15.0	0.73-1.35	0.049-0.090
"		4.0	7.5	0.73-1.35	0.097-0.180
Vinyl (transparent)	SC	1.0	21.0	1.10-1.15	0.052-0.055
" "	SC	2.0	10.5	0.93-1.15	0.089-0.109
Vinyl (plasticized)	Cal.	4.0	5.3	0.60	0.113
Vinyl (rubber)	SC	3.0	7.6	2.27	0.298
Cellulose Acetate	SC	1.0	22.0	0.75	0.034
" "		2.0	11.0	0.93	0.085
Cellulose Acetate Butyrate	SC	0.9	26.0	1.10	0.042
" " "		2.0	11.7	1.10	0.092
Ethyl Cellulose	SC	3.0	8.0	1.08	0.135
Pliofilm	SC	1.0	24.9	0.92-0.97	0.037-0.039
"		1.2	20.8	0.88-0.93	0.042-0.045
"		1.4	17.8	0.90-0.95	0.050-0.053
Saran (Vinylidene Chloride)	SC	1.0	16.3	1.09	0.067
" " "		2.0	8.2	0.98	0.120
Polyvinyl Alcohol	SC	1.0	21.6	1.62	0.075
" "		2.0	10.8	1.62	0.150
Polystyrene - Tensilized	ME	1.0	26.3	2.00	0.076
" "		2.0	13.7	1.09	0.083
S-60 Polymer	ME	1.0	28.0	0.76	0.027
" "		2.0	14.0	0.72	0.051
Polymer-V (stretched)	ME	1.0	20.0	0.85	0.042
" "		2.0	10.0	0.83	0.083
HE/VA	ME	1.0	26.8	1.03	0.038
"		2.0	13.4	0.98	0.073
E/VA	ME	2.0	13.8	0.73	0.053
		4.0	6.9	0.72	0.104
Chlorinated Polythene	ME	2.0	12.7	0.81	0.064
" " (28% Cl)		4.0	6.3	0.80	0.127
Nylon PACM-6	ME	1.0	25.3	0.93	0.037
" "		2.0	12.7	0.90	0.071

* ME - Melt-extruded
Cal - Calendered
SC - Solvent-cast

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APPENDIX-D

CELLOPHANE APPLICATIONS

Properties in which improvement is fairly generally desired for cellophane uses are: sheet flatness (pull-out), gage (uniformity of thickness), durability, appearance, moisture-proofness and coating adhesion.

The chief products packaged in cellophane are listed below with the 1948 sales volume and estimated market potential.

Class I

(Where cellophane is satisfactory and not particularly vulnerable)

Product	(000's Omitted) 1948 Sales	Cellophane Potential
Tobacco		
Cigarettes	22,234	28,000
Cigars	3,123	5,000
Other Products	1,385	3,500
Candy	15,409*	38,000
Box overwraps		
Individual units, except caramels		
Chewing Gum	2,703	5,500
Baked Goods	35,339	
Bread, except hard-crust		130,000
Sweet doughs		15,000
Cakes		17,000
Crackers & Biscuits	6,400	18,000
Sponge goods		
Sweet goods		
25% of crisp products		
75% of iced products		
Pretzels		
Meat	2,029	8,000
Sausage		
Luncheon Meat		
Noodles & Macaroni	2,407	4,000
Tea	597	1,800
Cereals - Carton Wrap	1,622*	13,500
Shortening & Lard		unknown
Dried Vegetables	400	6,000
Hosiery	1,185	3,000
Rubber Goods	475	1,000
Notions & Novelties	20	small
Wood products	25	small
Leather products	-	small
Cut Flowers	31	small
Seeds	-	small
Flower Bulbs	-	small
Sponges (Cellulose)		100
Laundry & Dry Cleaning		1,000
Total	95,384	298,400

*Includes Sales in Class II.

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APPENDIX-D (Cont'd)

Class II

(Where cellophane is reasonably satisfactory and improvement in properties is needed)

Product	(000's Omitted) 1948 Sales	Cellophane Potential
Candy		
Bagged Goods		2,000
Hygroscopic Candy		small
Crackers & Biscuits	5,030	17,000
Cream-filled pieces		
75% of crisp products		
25% of iced products		
Pies		3,000
Meat		
Fresh	2,112	15,600
Smoked	2,400	8,400
Poultry, fresh		large*
Coffee	651	3,600
Cereal, bagged units		4,000
Dried Fruit	336	1,500
Frozen Food	4,457	15,000
Nuts	2,665	7,600
Popcorn & potato chips	4,520	16,000
Fresh Produce	4,035	78,000
Butter		8,000
Cheese	2,500	12,000
Fresh fish		large*
Textile Units, lightweight.	2,300	3,000
Drugs (50% of total)	542	unknown
Paper products	1,964	6,500
Milk Bottle Hoods	952	large
Pressure Sensitive Tape	5,211	6,000
Metal Products (non-corrosive)**	378	large
Plastic Products	39	unknown
Candles	34	150
Deodorants	24	no data
Cosmetics	4	100
Total	40,154	207,450

* In 100% self-service stores

** Slide fasteners, metal and electric parts, razors and razor blades, wire.

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APPENDIX-D (Cont'd)

Class III

(Where cellophane is unsatisfactory)

Product	(000's Omitted) 1948 Sales	Cellophane Potential
Bread (hard-crust)		*
Heavy Textile Packages		5,000
Drugs (50% of Total)	542	unknown
Dehydrated Foods	26	small
Powdered Products		small
Soap	23	3,500
Dry Chemicals		small
Total	591	8,500

*Rye hard-crust, pumpernickel, hard-crust rolls. There are no production figures available on which to calculate potential. A film of high moisture permeability is required to prevent softening of the crust.

	(000's Omitted) 1948 Sales	Cellophane Potential
Grand total (listed products)	136,129	514,350
Total Domestic Sales & Potential (including non-listed products)	151,161	544,500

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APPENDIX-E

CELLOPHANE EXPANSION TO 350 MM ANNUAL POUNDS

Bases and Assumptions

1. During 1948 cellophane production was 160.6 million pounds, and 1948 costs and investments published in this report reflect actual average conditions during that year. At the completion of existing projects, the level of annual production will be 193.5 million pounds. Investments for cellophane at this production level include the added projects, and operating costs reflect conditions predicted for 1950 by the Cellophane Planning Section. Annual production may be increased to 350 million pounds by double sheeting 40 of the 56 existing casting machines. Investment to attain this level has been added at 510 du Pont construction index. Labor rates and material prices are assumed to be the same as at the 193.5 million pound level.

Potential productivity of casting machines at the cellophane plants is shown below:

		Annual Production* (lbs.)
Clinton:	16 machines double sheeted at 111 ypm	130 MM
Spruance:	8 machines double sheeted at 111 ypm	65 MM
	5 machines remain single sheeted at 111 ypm	20 MM
	3 machines remain single sheeted at 77 ypm	8 MM
Old Hickory:	8 machines double sheeted at 111 ypm	65 MM
	8 machines double sheeted at 66 ypm	39 MM
Yerkes:	8 machines remain single sheeted at 82 ypm	23 MM
	Total	350 MM

* Production figures approximate.

By the time the above changes have been made (approximately 15 years), efficiencies of double sheet machines will approach present single sheet machines.

2. The following changes auxiliary to double sheet casting have been assumed.

a. The chemical buildings will be converted to slurry steeping, conventional aging, continuous belt xanthation, and high temperature ripening.

b. Incremental coating capacity will be obtained with dispersion coating installations.

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APPENDIX-E (Cont'd)

c. Coagulating bath and all finishing operations will be expanded in proportion to production.

d. New power facilities were added as necessary and additional general facilities were assumed to be 15% of new investment.

3. Depreciation was taken at current rates, federal taxes were computed at 43%, and all other expense at 7.9%.

SUMMARY OF COST AND INVESTMENT

	Production - Millions of Pounds per Year		
	160.6	193.5	350
Cost of Sales ($/Lb.)			
Materials	$ .201	$ .183	$ .175
Conversion	.133	.123	.105
Total Mill Cost	.334	.306	.280
Selling, Administrative & Research	.030	.029	.027
Total Cost of Sales	.364	.335	.307
Investment ($/Annual Lb.)			
Permanent	$ .280	$ .257	$ .254
Working Capital	.099	.102	.097
Total	.379	.359	.351
Selling Price ($/Lb.)	.460	.480	.480
Operative Earnings ($/Lb.)	.096	.145	.173
Operative Return (%)	25.3	40.3	49.3
Net Earnings ($/Lb.)	.049(1)	.076(2)	.091(2)
Net Return (%)	13.0(1)	21.2(2)	25.9(2)

(1) Actual earnings and return based on 1948 performance (AOE = 6.4% of operative earnings and Federal Tax = 38% on taxable income).

(2) Net earnings and return based on forecast AOE of 7.9% and Federal Taxes at 43%.

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APPENDIX-F

PATENT STATUS OF THIN FILMS

Regenerated Cellulose

Basic patents for making and moistureproofing have expired. Commercially, our current moistureproofing protection is limited to wax-containing coatings, including the basic moistureproofing heat-sealing patent. A patent has recently been issued to us covering our vinylidene chloride polymer coated film which has not yet been placed on the market. Unless we can get a broad polymeric emulsion coating case allowed, the wax-free coating business may become open art.

Cellulose Acetate

Basically open art. There are many specific patents in field, particularly to Celanese Corporation and Eastman Kodak Company, du Pont being licensed under four of the latter's patents.

Cellulose Acetate Butyrate

Eastman Kodak Company dominates this field.

Polythene

Du Pont has a royalty-bearing license under the basic patents owned by I.C.I. and has granted a royalty-bearing sub-license to Carbide & Carbon Chemicals under some of these patents to make and sell the flake polymer and the finished film. Du Pont has agreed to license nominees of Carbide & Carbon, as well as our own customers, to make and sell the film and has licensed several companies to date.

Chlorinated Polythene

Basic patents owned by I.C.I. and included in the polythene license to du Pont. Rayon Department has released the Plastics Department from any restriction with regard to the sale of the flake for the manufacture of thin films.

Ethylene/Vinyl Acetate Copolymers

Dominated by du Pont. Very few patents yet issued.

Hydrolyzed Ethylene/Vinyl Acetate Copolymers

Domirated by du Pont. Very few patents yet issued.

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Polymer-V

Dominated by a Carothers patent claiming "a synthetic linear polyester . . . . ." A patent has just issued to du Pont covering more specifically "a highly polymeric linear terephthalic ester . . . . ."

PACM-6 Nylon

Nylon films broadly are dominated by du Pont. Although no patent specific to PACM-6 film has yet issued, we have filed one case to polyamides made from di(p-aminocyclohexyl)methane (PACM) and a dicarboxylic acid having at least six carbon atoms.

S-Polymer (Isobutylene/Styrene Copolymers)

Basic patents are owned by the Standard Oil Development Company (N.J.).

Vinyl Chloride Polymers & Copolymers

Basic patent for polymerizing a vinyl ester has expired. The Office of Alien Property has seized the basic polyvinyl chloride patent which was originally licensed to Rohm & Haas and possibly sub-licensed to Carbide & Carbon. A recent consent decree signed by Rohm & Haas made this patent available for licensing to all. The F. & F. Department has accordingly applied for a license. B. F. Goodrich (Koroseal) has many specific patents.

The vinyl chloride/vinyl acetate copolymer field is dominated by Carbide & Carbon (Vinylites) who also own the basic patent covering vinyl chloride/vinyl acetate copolymer plasticized with rubber - used in the margarine "squeeze bag".

Vinylidene Chloride Polymers & Copolymers

Dow dominates this field, although others, including du Pont, have specific coverage.

Rubber Hydrochloride

Marbo Patents, Inc. own basic patents, one having expired, under which du Pont has a non-exclusive, royalty-bearing license. Wingfoot (Goodyear) owns many specific patents under which Pliofilm is apparently made. It is not known if they have also been licensed by Marbo.

Ethyl Cellulose

Basically open art. Du Pont, Eastman Kodak and Dow Chemical Company have several specific patents.

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Polyvinyl Alcohol

Basically open art. Du Pont owns or controls several specific patents.

Polystyrene - Tensilized

Basic polystyrene patent has expired. Basic patents covering the tensilizing of polystyrene films have been seized by the Office of Alien Property. Du Pont has secured a license under them. Similar licenses are available to all. The Plax Company has specific patents covering the tensilizing of films.

APPENDIX-G

COMPARISON OF FILM-FORMING PROCESSES

Bases and Assumptions

Four film forming processes are considered for economic comparison: melt-extrusion, calendering, solvent-casting on a belt and dispersion-casting on a belt. In order that the comparison be influenced by processing costs only, the cost of the starting material has been kept the same in each case. This has been taken at an assumed purchase price of $0.40/lb.

Melt-extrusion and dispersion-casting are operated at a film speed of 87 ypm for 2 mil film. Extrusion of 4 mil film is at 87 ypm and calendering of 4 mil film is at 45 ypm. Solvent- and dispersion-casting are operated at 56 ypm. The number of major machines in each process for 10 million annual pounds of 2 mil film are as follows: extrusion - 2 extruders; calendering - 2 calenders; solvent-casting - 3 belt machines; dispersion-casting - 3 belt machines. For 4 mil film there is 1 extruder and 2 calenders.

In diapersion-casting two cases have been considered. In one case a monomer is received on the plant and emulsion polymerized in water to a polymer dispersion which is cast on a belt machine to form film. Costs of a simple emulsion polymerization process are included in this case. In the other case a polymer is received on the plant, and a polymer dispersion in water is made through the use of colloiding equipment and the cost of this operation included in this case.

All construction costs have been calculated at a 510 index.

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APPENDIX-G

COMPARISON OF COSTS OF FILM-FORMING PROCESSES

(10 Million Annual Pounds)

	Melt-Extrusion		Calendering		Solvent Casting	Dispersion Casting	
	2 Mil	4 Mil	2 Mil	4 Mil	2 Mil	Monomer 2 Mil	Polymer 2 Mil
	$ per 1 lb. film						
Polymer Cost*	$.40	$.40	$.40	$.40	$.40	$.40	$.40
Other Materials	.01	.01	.01	.01	.03	.02	.02
Total Material	.41	.41	.41	.41	.43	.42	.42
Operating Cost	.09	.09	.10	.10	.28	.25	.26
Total Mill Cost	.50	.50	.51	.51	.71	.67	.68
Administration and Selling	.03	.03	.03	.03	.03	.03	.03
Cost of Sales	.53	.53	.54	.54	.74	.70	.71
Permanent Investment	.17	.15	.22	.21	.88	.74	.83
Working Capital	.09	.09	.10	.10	.22	.21	.21
Total Investment	.26	.24	.32	.31	1.10	.95	1.04
Operative Earnings Required to Earn 25% Net Return (7.9% AOE, 43% Tax)	.13	.12	.15	.15	.52	.45	.49
Sales Price Required/Lb.	$.66	$.65	$.69	$.69	$1.26	$1.15	$1.20

*Delivered cost of polymer, or monomer in Case-I of Dispersion Casting, including return to manufacturing department if manufactured by du Pont. A standard polymer cost has been selected for the purpose of comparison. Actually, dispersion casting, starting with monomer, becomes attractive only if low-cost monomers, in the 10 to 15 cents a pound class, are used.

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Thermoplastic polymers which are stable in melt form can usually be melt-extruded and calendered. Film thicknesses less than one mil to more than 10 mils may be obtained by melt-extruding; at the present time calendering is limited to a minimum film thickness of about three mils. As compared with melt-extruded film, calendered film is less transparent, less tacky with a rougher surface, more resilient, and more crease-resistant. For these reasons, calendering produces a film with better properties for many fabric replacement applications. Compared with casting films from organic solvents both melt-extrusion and calendering entail lower investment in equipment, part of which is elimination of mixing and solvent recovery facilities.

Solvent recovery may also be avoided by casting films from an aqueous dispersion of a polymer onto a belt or wheel. The most favorable cost conditions are realized if the casting "dope" is prepared directly by emulsion polymerization of low cost monomers (such as vinyl chloride, vinylidene chloride, vinyl acetate, styrene, and acrylonitrile) without isolating and purifying the polymer. Aqueous dispersions of previously isolated and purified polymers offer little in savings over solutions in a cheap organic solvent. Both of these dispersion methods, however, require a high-cost belt casting machine and are slow in production rate. The only hope for dispersion-casting resides in the use of a method other than heat-drying which will serve to concentrate or precipitate the polymer during the casting process. Supersonic and electrostatic methods might be considered. In any event, compared with melt-extrusion, dispersion-casting is not worth working on unless a low-cost polymer, prepared by emulsion polymerization, with attractive film properties is discovered.

Solvent-casting, using organic solvents; is the most expensive film-forming method and is, essentially, reserved for specialty films. Solvent-cast vinyls and polythene are now selling at from 29 to 50¢ a pound more than the calendered and melt-cast varieties.

APPENDIX-H

COST COMPARISON OF NEW FILM CANDIDATES

Basis for Estimates at 10 and 50 MM Pound Levels

A. Materials

Material used for all films is assumed manufactured by another department of du Pont and transferred to the Rayon Department on a Company basis; i.e., both the Rayon Department and the department manufacturing polymer or ingredients realize the same per cent return on the respective investments.

1. Polymers Derived from Ethylene

All ethylene derivatives are produced via propane cracking at the Ammonia Department Sabine River Works, and chlorinated polythene is assumed to be produced at the Washington, W. Va. works of the Plastics Department. At the time of 10 MM film production level, it is assumed that ethylene is manufactured by propane cracking at 50 MM lb./yr. level. At 50 MM lb. level, ethylene production is assumed to be 200 MM lbs. Prices of raw materials are assumed at levels pertaining in February, 1949.

Data pertinent to costs of materials are tabulated below:

	Polythene		Chlorinated Polythene		E/VA		HE/VA	
Lbs. Film/Yr.	10	50	10	50	10	50	10	50
Lbs. Polymer/Yr.	45	60	10	50	10	50	10	50
Chlorine Content or Mole Ratio	-	-	27%		10:1		3:1	
Cost of Transfer*	$.15	.17	$.25	.26	$.20	.19	$.33	.29
Total Investment**	$.47	.37	$.59	.55	$.51	.35	$.74	.54

*Cost of Transfer - f.o.b. works in cost per pound of polymer.
**Total Investment - is total investment on a Company basis, including working capital.

2. Dimethyl Terephthalate (DMT) and Ethylene Glycol for "V" Film

DMT and glycol for "V" film - DMT figures for 10 MM lbs./yr. of film are based on 35 MM lb. level of production by Explosives Department at Repauno. This assumes Polymer-V will be manufactured for fiber as well as film uses. Cost of transfer will be $0.210/lb. and Explosives investment will be $0.195/annual pound. Glycol will be purchased at $0.15/lb. delivered. Recovered methanol is credited at current market price of $0.28/gal. At the

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50 MM lb. level, DMT figures are based on 135 MM lbs./yr. level by Explosives. Cost of transfer is $0.17/lb. and Explosives investment will be $0.18/annual pound.

B. Process Investment and Costs

1. Film from Ethylene Polymers

Polythene is the only one of the four ethylene derivatives that has been extruded in any sizeable quantity. But, in view of several tests and physical data, it has been assumed that the equipment for casting and finishing will be nearly the same for all of these candidates. Allowance has been made for possible instability of chlorinated polythene by casting from a circular hopper with low hold-up time.

The bases follow:

	10 MM lb./Yr.	50 MM lb./Yr.
Maximum Casting Speed	100 ypm.	120 ypm.
Cast Film Width	54"	108"
Maximum Slitting Speed	800 fpm.	1000 fpm.
Slit Roll Diameter	9½"	13½"
Set-ups/machine/shift (2 mil film)	45	55
Waste (based on packed production)	12%	10%
Polymer Yield	99.5%	99.5%
Working Capital Factors	Same as present Cellophane Division standards except for raw materials factor which equals 0.8 months.	

2. "V" Films

At the 10 MM lb./yr. level, ester interchange and polymerization are batch operations but at the higher level they are continuous.

At both levels, waste is recovered by conversion to DMT by reaction with methanol.

Following the bases is a summary of the number of casting and stretching machines for stretched 1 mil "V" film for comparison with the number of casting machines alone for unstretched 1 mil film.

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APPENDIX-H (Cont'd)

	10 MM lbs./Yr.	50 MM lbs./Yr.
Ester Interchange Cycle	6 hrs.	4 hrs.
Autoclave Cycle	12 hrs.	--
Charge/Autoclave	3000 lbs.	--
Hold-up in Polymerizer		10 min.
Capacity of Polymerizer		900 lbs./hr.
Maximum Casting Speed (stretched and unstretched)	100 ypm.	120 ypm.
Cast Film Width (for stretched film)	22"	22"
Cast Film Width (for unstretched film)	54"	108"
Stretching Draw in M.D. and T.D.	3X	3X
Final Stretched Film Speed	150 ypm.	200 ypm.
Slitting Bases	Same as other films	
Working Capital Factors	Same as present Cellophane Division except raw materials factor of 0.8 months.	

Summary of Casting and Stretching Equipment for 1 Mil V-Films

	10 MM		50 MM	
	Stretched	Unstretched	Stretched	Unstretched
Number of Casting Machines	1 (22")	3 (54")	4 (22")	6 (108")
Number of Stretching Machines	2 (60")		6 (60")	

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APPENLIX-H

COST COMPARISON OF NEW FILM CANDIDATES

MELT-EXTRUSION PROCESS

10 MM Annual Pounds

	POLYTHENE						CHLORINATED POLYTHENE				E/VA			
	1 MIL		2 MIL		4 MIL		2 MIL		4 MIL		2 MIL		4 MIL	
	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.
Materials														
Mfg. by du Pont	$.18	$.47	$.18	$.47	$.18	$.47	$.26	$.59	$.26	$.59	$.23	$.51	$.23	$.51
All Other	.01		.01	-	.01	-	.01	-	.01	-	.01	-	.01	-
Total Materials	.19	.47	.19	.47	.19	.47	.27	.59	.27	.59	.24	.51	.24	.51
Operating Cost	.10		.09		.09		.09		.09		.09		.09	
Total Mill Cost	.29		.28		.28		.36		.36		.33		.33	
Administration & Selling	.03		.03		.03		.03		.03		.03		.03	
Cost of Sales	.32		.31		.31		.39		.39		.36		.36	
Perm. Investment - Rayon		.21		.17		.15		.17		.16		.1		.15
Working Capital - Rayon		.10		.09		.09		.12		.12		.10		.10
Total Investment		.78		.73		.71		.88		.87		.78		.76
Operative Earnings Required to Earn 25% Net Return (7.9% AOE, 43% Tax)	.37		.35		.34		.42		.41		.37		.36	
Sales Price Required/Lb.	$.69		$.66		$.65		$.81		$.80		$.73		$.72	

	HE/VA						STRETCHED "V"						UNSTRETCHED "V"					
	1/2 MIL		1 MIL		2 MIL		1/2 MIL		1 MIL		2 MIL		1/2 MIL		1 MIL		2 MIL	
	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.
Materials																		
Mfg. by du Pont	$.35	$.75	$.35	$.75	$.35	$.75	$.24	$.22	$.24	$.22	$.24	$.22	$.24	$.22	$.24	$.22	$.24	$.22
All other	.01		.01		.01		.06		.06		.06		.06		.06		.06	
Total Materials	.36	.75	.36	.75	.36	.75	.30	.22	.30	.22	.30	.22	.30	.22	.30	.22	.30	.22
Operating Cost	.13		.10		.09		.17		.15		.14		.18		.15		.14	
Total Mill Cost	.49		.46		.45		.47		.45		.44		.48		.45		.44	
Administration & Selling	.03		.03		.03		.03		.03		.03		.03		.03		.03	
Cost of Sales	.52		.49		.48		.50		.48		.47		.51		.48		.47	
Perm. Investment - Rayon		.30		.21		.16		.52		.44		.41		.51		.44		.42
Working Capital - Rayon		.15		.14		.14		.14		.12		.12		.14		.12		.12
Total Investment		1.20		1.10		1.05		.88		.78		.75		.87		.78		.72
Operative Earnings Required to Earn 25% Net Return (7.9% ACE, 43% Tax)	.57		.53		.50		.42		.37		.36		.41		.37		.36	
Sales Price Required/Lb.	$1.09		$1.02		$.98		$.92		$.85		$.83		$.92		$.85		$.83	

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APPENDIX-H

COST COMPARISON OF NEW FILM CANDIDATES

MELT-EXTRUSION PROCESS

50 MM Annual Pounds

	POLYTHENE						CHLORINATED POLYTHENE				F/VA			
	1 MIL		2 MIL		4 MIL		2 MIL		4 MIL		2 MIL		4 MIL	
	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.
Materials														
Mfg. by du Pont	$.20	$.37	$.20	$.37	$.20	$.37	$.28	$.55	$.28	$.55	$.22	$.36	$.22	$.36
All Other	.01	-	.01	-	.01	-	.01	-	.01	-	.01	-	.01	-
Total Materials	.21	.37	.21	.37	.21	.37	.29	.55	.29	.55	.23	.36	.23	.36
Operating Cost	.07		.06		.06		.06		.06		.06		.06	
Total Mill Cost	.28		.27		.27		.35		.35		.29		.29	
Administration & Selling	.03		.03		.03		.03		.03		.03		.03	
Cost of Sales	.31		.30		.30		.38		.38		.32		.32	
Perm. Investment - Rayon		.13		.10		.08		.11		.09		.10		.08
Working Capital - Rayon		.09		.08		.08		.11		.10		.09		.08
Total Investment		.59		.55		.53		.77		.74		.55		.52
Operative Earnings Required to Earn 25% Net Return (7.9% AOE; 43% Tax)	.28		.27		.25		.37		.36		.26		.25	
Sales Price Required	$.59		$.57		$.55		$.75		$.74		$.58		$.57	

	HE/VA						STRETCHED "V"						UNSTRETCHED "V"					
	1/2 MIL		1 MIL		2 MIL		1/2 MIL		1 MIL		2 MIL		1/2 MIL		1 MIL		2 MIL	
	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.	M.C.	Inv.
Materials																		
Mfg. by du Pont	$.32	$.54	$.32	$.54	$.32	$.54	$.20	$.20	$.20	$.20	$.20	$.20	$.20	$.20	$.20	$.20	$.20	$.20
All other	.01		.01		.01		.06		.06		.06		.06		.06		.06	
Total Materials	.33	.54	.33	.54	.33	.54	.26	.20	.26	.20	.26	.20	.26	.20	.26	.20	.26	.20
Operating Cost	.09		.07		.06		.11		.10		.09		.10		.09		.08	
Total Mill Cost	.42		.40		.39		.37		.36		.35		.36		.34		.34	
Administration & Selling	.03		.03		.03		.03		.03		.03		.03		.03		.03	
Cost of Sales	.45		.43		.42		.40		.39		.38		.39		.38		.37	
Perm. Investment - Rayon		.20		.13		.11		.31		.22		.20		.24		.19		.17
Working Capital - Rayon		.12		.12		.11		.10		.09		.09		.09		.08		.08
Total Investment		.86		.79		.76		.61		.51		.49		.53		.47		.45
Operative Earnings Required to Earn 25% Net Return (7.9% AOE, 45% Tax)	.41		.37		.36		.29		.24		.23		.25		.22		.22	
Sales Price Required/Lb.	$.86		$.80		$.78		$.69		$.63		$.61		$.64		$.60		$.59	

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APPENDIX-I

FILM PROPERTIES (75°F. - 35% RH.)

Thick. Mils	Film	Tensile Strength P.S.I.	% Elongation At Break	Tear Resistance Elmendorf	Flex Resistance	Impact Resistance	Stiffness (Clark)	Water Vapor Permeability IPV/Mil	Heat-Sealing Temperature °C. Incipient	Heat-Sealing Temperature °C. Optimum	Specific Gravity
1.0	Cellophane, Moistureproof	6,000-12,000	18-50	2-10	55-130	4-6	2-5	30-40	90-100	130-150	1.40
1.4	Cellophane, Moistureproof	7,500-12,000	21-58	5-10	48-123	8-9	4-7	30-40	90-100	130-150	1.40
1.3	Polythene Melt-Extruded	2800	750	175	10,000+	12	0.5	100	85	115	0.92
2.0	" " "	2800	800	280	10,000+	20	1.5	100	85	115	0.92
4.0	" " "	2800	900	500	2,000	40	3	100	85	115	0.92
4.0	Vinyl - Calendered	2,200- 3,500	240-450	250-1000	10,000+	85-130+	0.2-0.7	1800	80-85	120-145	1.2-1.4
1.0	Cellulose Acetate	8,000-14,000	20-45	2-5	37	3	2-3	6,000-8,000	200-210	220	1.30
1.0	Cellulose Acetate Butyrate	6,000- 9,000	60-70	4-6	76	4-5	3	3000	160-165	170-180	1.17
1.0	Ethyl Cellulose	9500	45	4	160	9	1.5	9000	140	170	1.15
1.0	Pliofilm (Plasticized)	4,200- 5,700	480-600	16-390	1400	1	<1	60-300	100	115	1.11
1.4	Pliofilm (")	3,500- 6,300	200-640	16-400	1400	1-2	1-2.5	60-300	100	115	1.11
1.0	Vinylidene Chloride (Saran-517;Cry-O-Rap)	8,700-11,700	40-80	8-24	10,000+	8-10	0.2-0.3	20	80-85	140-145	1.68
2.0	Polyvinyl Alcohol	8000	270	3200	2	2		5000+	165	175	1.21-1.31
1.0	Polystyrene-Tensilized	10,500	9	14	4	1	8	600	95	115	1.06
1.6	S-60 Polymer	3000	270	110	2,600	3	1,5	200	60	90	0.99
1.0	Polymer-V - Unstretched	7000	230	35	5,000	1.5	4	300	90	130	1.34
1.0	Polymer-V - Stretched	16,000	200	250	7,500	30	2	200	135	160	1.38
2.0	HE/VA	5,500	450	435	3,600	40	4	300	90	125	1.03
4.0	E/VA	1,600	1300	325	15,000+	60	0.5	1000	60	120	1.00
2.0	Chlorinated Polythene (28% Cl)	2,600	350	150	10,000+	35	<1	150	60	120	1.09
4.0	Chlorinated Polythene (28% Cl)	2,700	700	950	5,000	69	0.8	150	60	120	1.09
1.0	Nylon 6A	8,800	520	32	1,300	2.2	0.7	2500	100	130	1.10
1.0	Nylon, PACM-6	9,000	110	16	100	1	5	550	140	180	1.09

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APPENDIX-J

SOLVENT-CAST CHLORINATED POLYTHENE AND ETHYLENE/VINYL ACETATE FILMS

	Ethylene/Vinyl Acetate			Chlorinated Polythene (Plastics Department)		
E/VA Ratio	11.8/1	10.8/1	11.1/1			
% Chlorine				27	28	32.5
Thickness, mils	2.4	1.7	1.5	1.6	1.8	1.7
Tensile strength, p.s.i.	4300	2700	3350	1200	2600	3000
% Elongation at break	1060	920	420	2280	600	470
Tear (Elmendorf)	465	425	365	170	1160	1140
Tumble - 75°F.	2000+		2000+		2000+	2000+
" - 0°F.	1000+		15		90	125
Stiffness	Very limp	Very limp	Very limp	Very limp	Very limp	Very limp
Appearance	Clear	Clear	Clear	Clear	Clear	Clear
Slip	Slightly tacky	Very tacky	Very tacky	Very tacky	Very tacky	Very tacky

	Chlorinated Polythene (Plastics Dept. - Dispersion Chlorinated)			Chlorinated Polythene (Ammonia Dept. - Solution Chlorinated)		
% Chlorine	28.0	36.7	40.6	25.9	39.6	49.0
Thickness, mils	1.8	1.6	1.8	2.0	2.0	1.9
Tensile strength, p.s.i.	2600	3600	5500	314	860	3900
% Elongation at break	600	410	80	2900	1900	150
Tear (Elmendorf)	1160	615	60	*	*	25
Stiffness	Very limp	Limp	Stiff	Very limp	Very limp	Limp
Appearance	Clear	Clear	Clear	Clear	Clear	Clear
Slip	Very tacky	Fair	Good	Very tacky	Very tacky	Fair

* Too rubbery to measure.

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APPENDIX-J (Cont'd)

MELT-EXTRUDED CHLORINATED POLYTHENE AND ETHYLENE/VINYL ACETATE FILMS

	Ethylene Vinyl Acetate						Chlorinated Polythene (Plastics Department)			
E/VA Ratio	5/1	8/1	8/1	8/1	12/1	12/1				
% Chlorine							27**	27**	27**	28***
Thickness, Mils	3.4	2.8	3.3	3.7	4.0	5.5	2.18	3.19	4.2	4.0
Tensile Strength, p.s.i., T.D.*	1630	2540	2480	2500	1500	2460	2110	2370	2800	3000
Tensile Strength, p.s.i., M.D.*	1170	2320	2570	2820	1700	1350	2410	2240	2630	2700
% Elongation at break, T.D.	1920	2440	1520	1680	1200	1120	330	550	647	600
% Elongation at break, M.D.	1720	1440	880	1040	1400	1320	280	480	535	800
Tear (Elmendorf) T.D.	520	215	580	590	400	490	415	800	1150	1000
Tear (Elmendorf) M.D.	205	185	150	150	250	220	600	410	900	900
Tumble, 75°F.		2000+			2000+		2000+	2000+		2000+
Impact Resistance		40	29	65	60	64			71	69
Flex Resistance					15,000+				10,000+	5000
Stiffness (Clark)					0.45		0.4	0.5	0.80	0.75

* T.D. = Transverse direction; M.D. = Machine direction.
** Extruded by Visking.
*** Extruded by Plastics Department.

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MELT-EXTRUDED CHLORINATED POLYTHENE AND ETHYLENE/VINYL ACETATE FILMS

Fabric Replacement Properties

	Calendered Vinylite	Chlorinated Polythene	Ethylene/ Vinyl Acetate
Thickness, mils	4	4	6-8
% Tensile Recovery,			
2% elongation	68	78	98
5% elongation	71	84	94
10% elongation	74	86	95
% Crease Recovery,			
15 seconds	58	76	80
30 seconds	69	81	82
60 seconds	79	85	84
100 seconds	84	87	86
% Stress Decay,			
10% stretch, 30 seconds	22	10	5

APPENDIX-K

NEW FILM CANDIDATES - TIME SCHEDULE

The present program on new films candidates is aimed at meeting the following schedule.

Polythene

July 1949	Start-up of large polythene extruder by the Cellophane Division (capacity 416,000 lbs. of film a month).

Polymer-V

September 1949	Field work on unstretched V-film (2000 lbs. a month).
February 1950	Field work on stretched V-film (2000 lbs. a month).
January 1951	Decision on scale-up.

E/VA

May 1949	100 lb. lots of polymer available from Belle.
August 1949	2000 lb. lots of polymer available from Belle.
January 1950	Field work on film (2000 to 5000 lbs. a month).
June 1950	Preliminary discussion with Ammonia Department on capacity.
January 1951	Decision on scale-up.

HE/VA

June 1949	100 lb. lots of polymer available from Belle.
October 1949	2000 lb. lots of polymer available from Belle.
March 1950	Field work on film (2000 lbs. a month).
September 1950	Preliminary discussion with Ammonia Department on capacity.
March 1951	Decision on scale-up.

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APPENDIX-L

DISTRIBUTION OF RESEARCH EFFORT ON NEW FILMS

At the present time there are seven active projects on new films, including polythene, in the Cellophane Research, Pioneering Research and Development Sections. In addition there are throughout the Company, many general exploratory projects on polymers which consider films as one potential application. In the latter category Pioneering Research has two, the Chemical Department eleven, and the Ammonia Department nine projects. Neither the Chemical Department nor the Ammonia Department have projects exclusively directed toward films.

A list of existing projects by number and title with assigned manpower in the Rayon, Chemical and Ammonia Departments follows:

PROJECTS ON NEW FILMS

Department	Project No.	Title	Manpower
Rayon	CX-242	Scouting Studies for New Films and Coatings	0
	CX-258	Development of Polymer-V Films	3
	CX-289	Continuous Polymerization of V-Type Polymers for Films	2
	CX-296	Development of Commercial Polythene Film	8
	CX-298	Stretching Process for Polymer-V Film	3
	PX-284	Polymers for Fabric Replacement Films	2
	DX-135	Melt-Extruded Films	1

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PROJECTS RELATED TO NEW FILMS

Department	Project No.	Title	Manpower
Rayon	PX-260	New Methods for Condensation Polymerization	2
	PX-283	Polyhydrocarbons	1
Chemical	3101	New Nylons for Plastics	1
	3144	Synthesis of New Polyamides	2
	3291	Polytetrafluoroethylene Dispersions	2
	3411	Hydroxylated Polymers	1
	3467	Orientable Polyalcohols from Ethylene/Carbon Monoxide Copolymers	Part Time
	3488	Multi-Ingredient Copolyamides	1
	3511	Ethylene/Acrylic Ester Copolymers	1
	3532	New Types of Polymer Dispersions	1
	3533	Polymerization of Chlorotrifluoroethylene	1
	3605	Orientable Ketoester Polymers	1
	3633	Alpha-Amino Acid Polyamides	4

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APPENDIX-L (Cont'd)

PROJECTS RELATED TO NEW FILMS

Department	Project No.	Title	Manpower
Ammonia	685	Polyketones	4
	693	New Ethylene Polymers	1
	737	Chlorinated Polythene	1
	740	E/VA - HE/VA Process Studies	1
	742	Special Polythenes	1
	747	E/VA Evaluation	1
	751	Type-8 Nylon	1
	760	Polymers from Oxalic Acid	1
	763	Nylon Product Development	2
	Belle S.W.	HE/VA, E/VA, Experimental Polythenes	6
	743	Polythene - 1949	1
	New Project	Ethylene Resins	4

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APPENDIX-M

SOURCES OF PUBLISHED INFORMATION

"Market Analysis Reports" and "Cellophane Competitive Reports", 1947-48, H. P. Setter, Cellophane Div., Trade Analysis Section.

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February 21, 1950

MR. D.F. CARPENTER
ASSISTANT MANAGER
BATON DEPARTMENT

SURVEY OF CELLOPHANE FUTURE CAPACITY - ECONOMICS AND COMPETITION

In an endeavor to set up a long-range pattern as a means of coordinating the functioning of this Division, it became apparent that we needed additional up-to-date information on the following -

(a) A careful market potential study for Cellophane. The report of this investigation issued February 1 by our Trade Analysis Section we believe is the most thorough study of this nature ever conducted by the Cellophane Division.

(b) Determine for the four plants the most economical expansion program on the assumption that additional Cellophane would be required from investigation (a) above. This entailed a lot of detail work since we have plants ranging in age from 25 years to about 5 years. To properly coordinate the thinking of our plant personnel, as well as that of our Technical organization, a committee was established headed by Mr. Bill Neff as Chairman and a qualified representative from each location. The Director of Research, the Director of Production and Division Management sat in on many of these meetings, and we believe a very clear understanding as to the most attractive direction in which to increase our capacity has resulted.

(c) More accurate and up-to-date information was required on the impact of non-cellulosic self-supporting films and their potential and possibilities. This study was conducted by Jim Mitchell. The report, a most thorough and comprehensive one, is in the files.

The results of the above studies have as of this date resulted in our securing authorization of a project Part 1 for an increase at Spruance of approximately ten million pounds per year. We hope not later than March 15 to submit a project covering the conversion of one casting machine to multiple sheet casting, this being the route clearly indicated and agreed upon to take in order to increase our casting room

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capacity. We also have assigned the work to the logical organization to assure that the correct and proper answers will be available when necessary, in keeping with an orderly expansion of our existing plants to take care of trade requirements.

Late in 1949 we were asked to provide the Executive Committee with a survey or story of the future of Collophane. The attached report prepared by Dr. Karns and Dave Edwards is largely a summation of the investigation that I have attempted to outline. The above has been under way for approximately nine months.

We trust that this information, which bears the approval of the Division Management, will provide what is desired on the part of our Executive Committee.

A. [illegible]
DIVISION MANAGER

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E. I. DU PONT DE NEMOURS AND COMPANY

[redacted]

SURVEY OF

CELLOPHANE FUTURE CAPACITY

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E. I. DU PONT DE NEMOURS AND COMPANY

RAYON DEPARTMENT
TECHNICAL AND CELLOPHANE DIVISIONS

February 16, 1950

SURVEY OF CELLOPHANE FUTURE CAPACITY, ECONOMICS AND COMPETITION

PART I

SUMMARY AND GENERAL CONCLUSIONS

In its twenty-six years the domestic cellophane industry developed from nothing to a 232 million annual-pound business in 1949, and forecast sales for 1950 are 275 million pounds. Current demand exceeds the industry capacity. Du Pont established this industry and has been the principal participant in its development and growth. As volume grew, costs and prices dropped, rapidly at first and then more slowly. Today the price is relatively stable, the product is accepted in many and diversified fields, and the pattern of the past promises a future of still more volume and corresponding profits.

The brightness of this picture automatically prompts caution in using it as a guide to the future and there are, indeed, good reasons why caution is indicated. In the past we have had a good basic patent position which is practically gone. We have had only one competitor, American Viscose, who developed or paid for their know-how. We will now have a second competitor - Olin Industries,

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with access to all we know plus all they can develop, who, in addition, will have the best plant we can build for them which will be five years ahead of our best. Finally, and most importantly, whereas cellophane has been the dominant one of a few transparent films for years, there are now in sight many high polymer film-formers, and the possibilities for more are practically unlimited from a rapidly developing polymer science. The properties from some we now know are attractive and at least one film-forming process, melt-extrusion, is lower in investment than we can expect for cellophane.

It is timely then, that we examine critically the cellophane business and du Pont's place in it to determine our best course, technically and investment-wise. This is a summary from a report, to follow in detail, of such an examination which supplies conclusions by answering three questions:

1. What is the future cellophane market and how can we supply it best?

2. What will our cost and investment position be as we choose to fill none, part, or all of the increase by our best foreseeable route, and how will our position compare with that of competition?

3. What should we do and when should we do it, to assure ourselves the best profit position over the probable life of the cellophane venture?

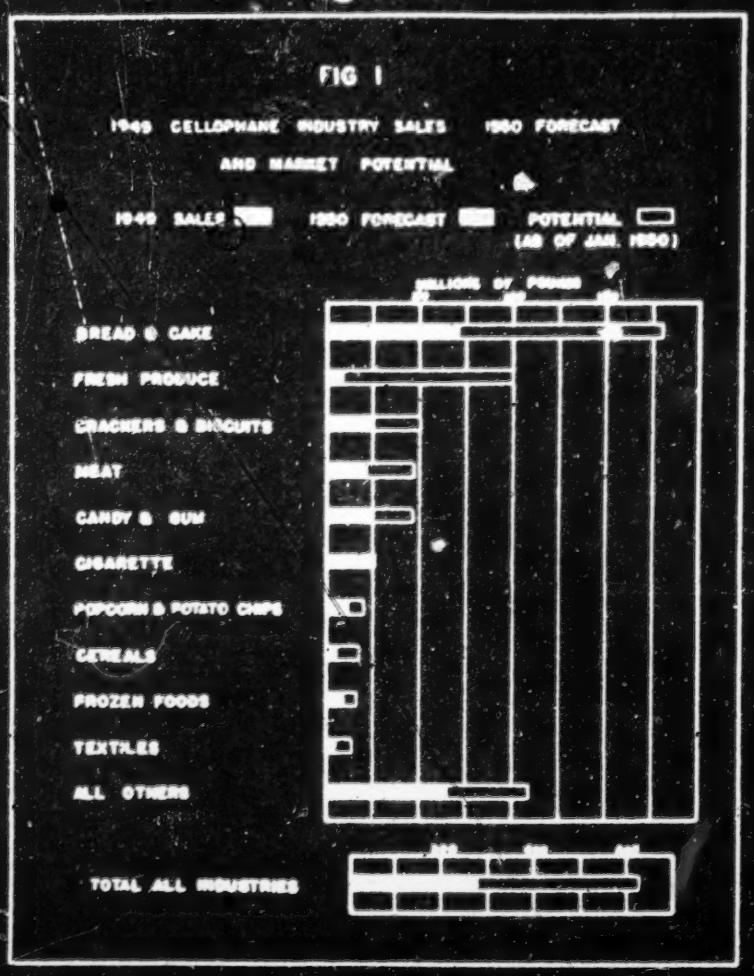
Volume Prospect in Cellophane Markets

In considering the volume toward which we should plan in determining our ultimate investment and cost position,

we have chosen to look ahead for fifteen years. We have done this because modifications of our existing plants can supply the needs foreseen in that time if we plan foresightedly and proceed in an orderly way beginning now.

The probable sales volume of the cellophane industry has been projected to 1965 from the volume potential of the industry and the probable sales development rate as estimated by the Cellophane Sales Section. Their detailed studies show the potential today, in uses where cellophane now renders satisfactory service, to be 625 million pounds. This would be required for logical and full extension of cellophane use by the customers we now call on plus that of other similar users that we or other manufacturers could call on. Figure 1 shows, by industries, where sales now go and where this estimated potential lies.

Figure 1.



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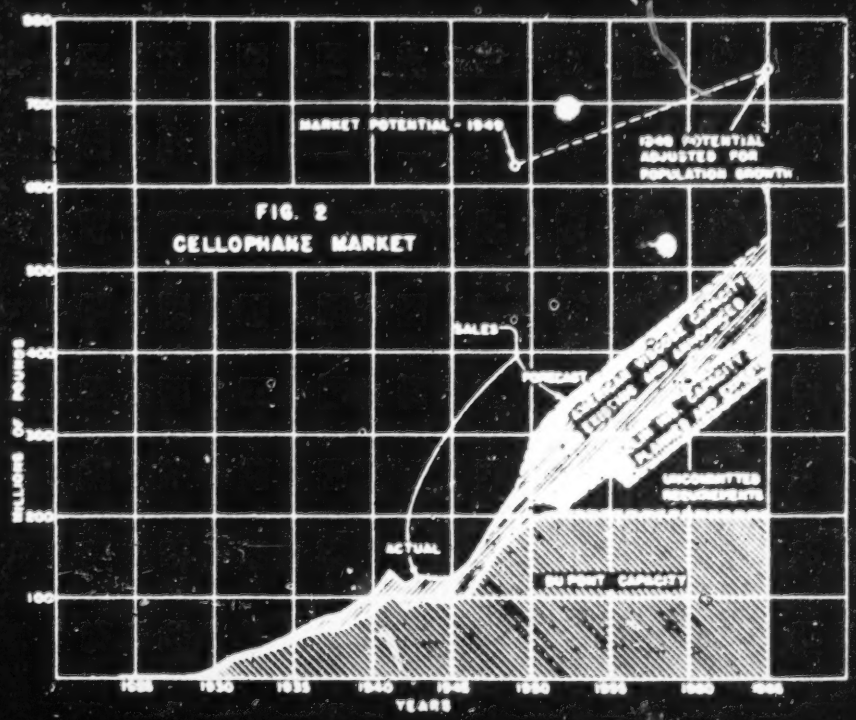
Adjusted upward in proportion to the expected population growth, this potential volume becomes 740 million pounds in 1965. These estimates make no allowance for the development of new uses for cellophane beyond those now practiced. Sales against this potential have been forecast in detail for 1950,1951, and 1952, and the probable industry sales development rate has been projected to 1958. Arbitrarily extended at this rate, sales in 1965 can be estimated at 540 million pounds. We have used this figure as a reasonable basis for our long-range planning on the ground that it conservatively assumes no new uses will develop, and, that it still leaves 200 million pounds of foreseeable outlet unfilled. Sales forecasts and expected production volumes are shown graphically in Figure 2.

Figure 2.



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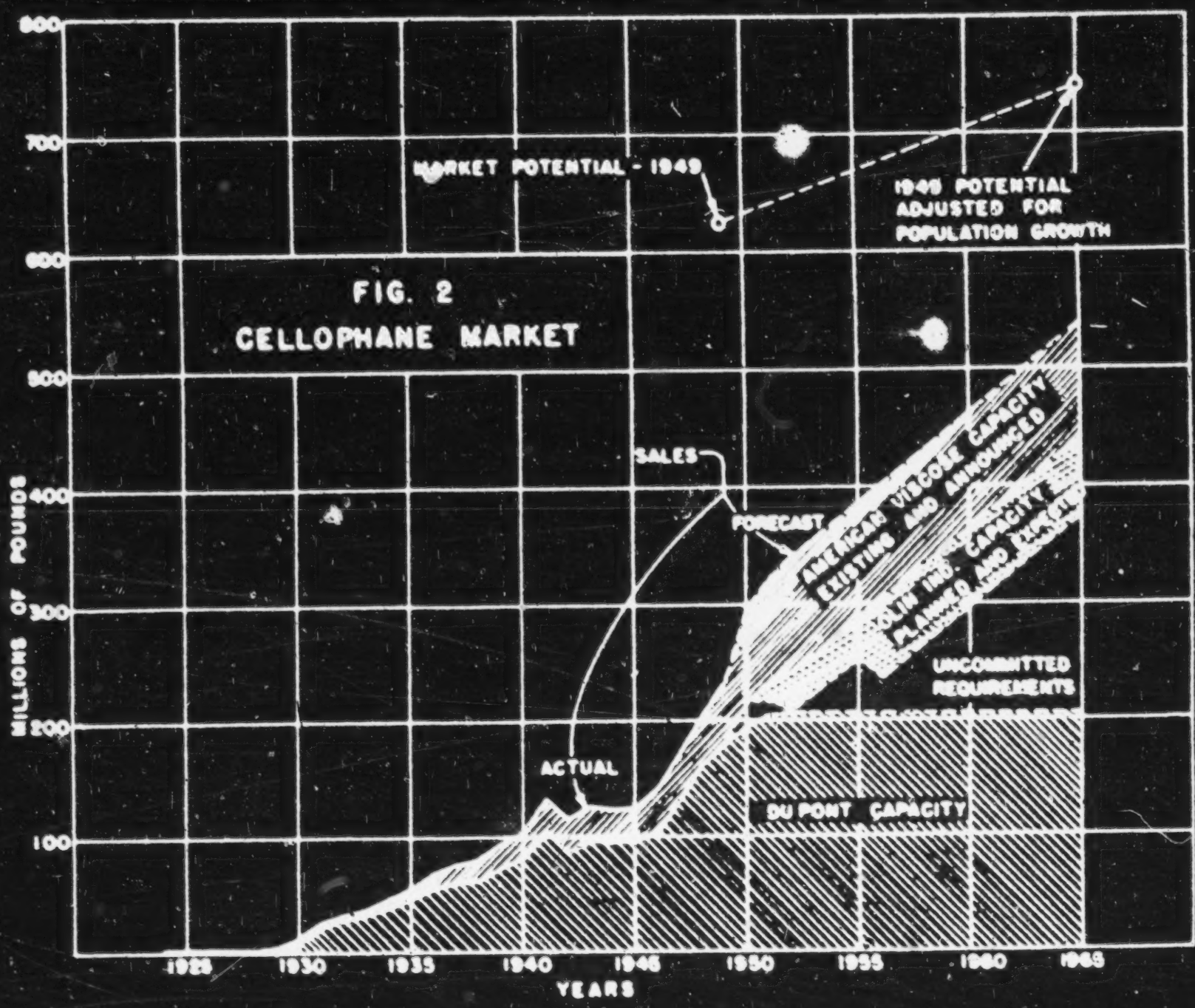
that it still leaves 200 million pounds of foreseeable outlet unfilled. Sales forecasts and expected production volumes are shown graphically in Figure 2.

Figure 2.



When from this forecast of industry sales as shown we deduct the capacity we now have, the 100 million pounds which American Viscose have announced, and the 67 million pounds which Olin Industries are including in their early plans, we see that before 1965 the industry must expand its present and announced capacities by 160 million pounds to supply film for uses in which cellophane now renders satisfactory service.

As a basis for comparison to determine whether this expansion should be by du Pont in cellophane, we have planned plants, determined investments, and calculated costs for portions of that volume up to 149 million pounds, which should encompass completely our reasonable expectations.

Future Cellophane Investment, Cost and Return

Plans for modified, re-arranged, technically advanced plants to supply this film will be presented in a second part of this report in sufficient detail to guide us in choosing and executing any step. These plans show that the volume increase can be obtained more cheaply by modifying existing plants than by any other way, and that by so doing our present investment, cost, and return positions can be improved significantly, as shown in Table I. Step-wise increases in volume, not shown, but discussed fully in Part II, can be made with corresponding step-wise improvements in our return position.

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Table I

Summary of Investment, Cost and Return

	Present Operation		After Expansion	
Annual Production (Millions of Pounds)	195		344	
	$(Millions)	$/Lb.	$(Millions)	$/Lb.
Permenent Investment	50	0.26	88	0.26
Working Capital	20	0.10	33	0.09
Total Investment	70	0.36	121	0.35
Sales (100% of Capacity*)	93	0.48	164	0.48
Cost of Sales	66	0.34	106	0.31
Operative Earnings	27	0.14	58	0.17
Net Earnings (7.7% AOE - 43% Tax)	14	0.07	31	0.09
Net Return on Total Investment	20%		25%	
Turnover	134%		136%	

*Normal maintenance down-time allowed.

A most significant item in the above table is the reduction in cost of sales from $0.34 now to $0.31 per pound after expansion. This results largely from reduced labor from technical advances in the Chemical Building processes and from reduced materials cost from dispersion coating. The significance of this improved cost will be treated more fully when our position with respect to cellophane competition is discussed (pages 7 to 10).

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The return on new money required for the full expansion is shown in Table II below. Details of new money requirements, write-offs, and final investment for each plant, given in the latter part of this report, show that the return on new money on the several plants is similar, varying from a low of 26% at Spruance to a high of 31% at Yerkes.

Table II

New Money Position**

	Proposed Expansion	
Added Annual Production (Millions of Pounds)	149	
	$(Millions)	$/Lb.
New Money Expenditures		
a) For Permanent Investment	43	0.28
b) For Depreciation & Operations	2	0.02
c) For Working Capital	13	0.09
Total New Money*	58	0.39
Net Earnings after Expansion	31	
Present Net Earnings	14	
Net Earnings Applicable to New Money	17	
Net Return on Total New Money	28%	

* Investment write-off during expansion amounts to 5 million dollars.

** All return figures in Tables I and II are based on today's materials costs and cellophane selling prices.

Competitive Position - Against Cellophane

Competition for du Pont cellophane will come from competitive cellophane and from non-cellophane films made by us or by others. The analysis of competition from cellophane will be the simpler and will be discussed first.

Since our quality must equal that of competition and since their quality will likely equal ours, our relative competitive positions will depend on our respective abilities to make a return at a price. This, in turn, will depend on our respective investments and costs.

To compare our future position with the severest competition we can anticipate, we have developed costs and investment on the best possible synthesized competitive plant which could operate by about 1957 or 1958. We have incorporated in all of it the improvements that we will put in the expanded part of ours. It is an eight-machine double-sheet plant, using all dispersion coating, and labor-saving Chemical Buildings. Its output is 55 million pounds, which is economical in size and balance. Its investment, cost of sales, and return at today's prices are compared in Table III with our position now and when expanded, as taken from TableI (page 6).

Table III

Competition against Cellophane

	Present Operation	After Expansion	Strongest Competition
	$/Lb.	$/Lb.	$/Lb.
Permanent Investment	0.26	0.26	0.44
Working Capital	0.10	0.09	0.09
Total Investment	0.36	0.35	0.53
Sales (100% of Capacity)	0.48	0.48	0.48
Cost of Sales	0.34	0.31	0.29
Operative Earnings	0.14	0.17	0.19
Net Earnings (7.7% AOE - 43% Tax)	0.07	0.09	0.10
Net Return on Total Investment	0.20	0.25	0.18

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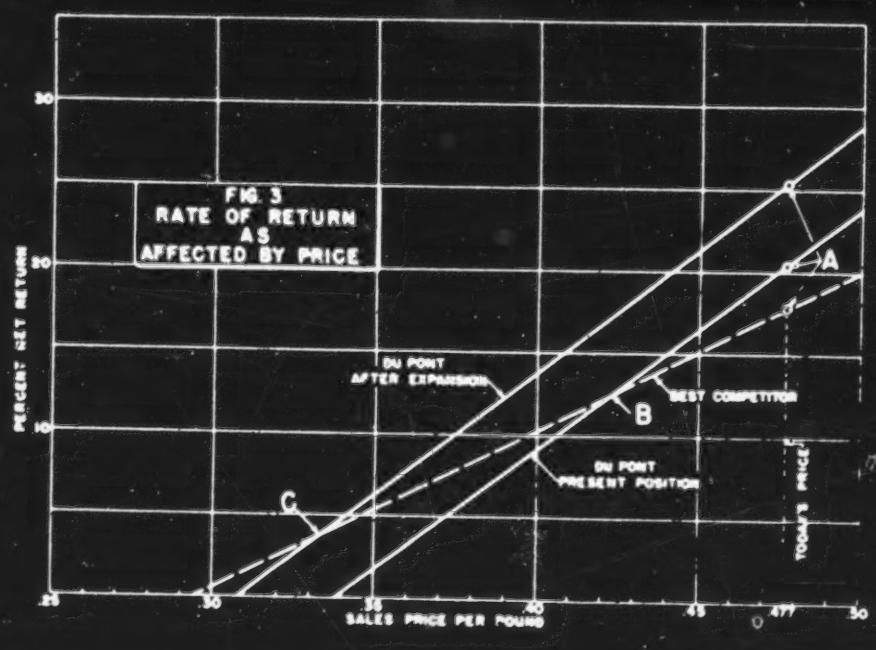
It is apparent that our investment per annual pound is, and will be, $0.18 lower than the best probable cellophane competition. Our cost, operating as we now do, is $0.05 per pound higher than competition, and will still be $0.02 per pound higher than competition when we expand. Our return, however, at today's cost and price will be 2% higher than the best competition can expect and after expansion it will be 7% higher than competition. As prices fall below those prevailing today and return is correspondingly reduced, our position relative to competition will change as shown in Figure 3. The lines in the graph show our return and that of competition over a range of prices. These are calculated from the cost and investment data in Table III, page 8.

Figure 3.



Point A reiterates graphically that our return will be better than that of competition if today's film price holds as already shown and discussed in Table III.

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When prices fall and return is reduced, our return, because of our higher cost, falls faster than that of competition, as shown by the slopes of the respective return lines. It is still better than competition, however, until we both earn at the same rate when cellophane sells at $0.43 per pound at point B. After our costs are lowered $0.03 by the expansion route (to about the actual cost at Clinton today) our return will continue to be better than competition until the price falls to $0.33 - point C. With this possibility for return, du Pont's outlook against cellophane competition looks good even when we make the unlikely assumption that a new competitor could have the advantages of starting from scratch in a new 55 million pound plant unburdened with any less modern capacity.

Competitive Position Against Non-cellophane Films

An analysis of the position of cellophane against non-cellophane competition is not a matter of simple and direct comparison because, while non-cellophane and cellophane films markets over-lap, prices are different, and the combinations of useful properties in the non-cellophane films are by no means identical with those of cellophane. This holds for acetate film which is clearer, Pliofilm and polythenewhich are tougher, and saran which is more moisture-proof. The difficulty of comparison will continue until some other film can do cellophane's entire job or until another film reaches cellophane's cost. Until then non-cellophane films will attack cellophane marginally and find markets peculiarly their own as they do now.

Even though non-cellophane competition is so poorly defined that accurate comparisons are not possible, we cannot, in this survey of cellophane's ultimate position, ignore it, for research in the field by us and by others is active. We must, in

the absence of facts, work from assumptions which will go so far afield as to assume processes to make films from undiscovered polymers. The assumptions, however, can be chosen to simplify the problem until we can handle it and must be chosen to assure that we face competition at its worst. Having thereby bracketed cellophane's probable position between today's real competitors and tomorrow's possible ones, we can then speculate on the probability that competitors in cost and quality will emerge, and on the consequences if they do. We have done this by first assuming a process and plant using all the advantages in operation that a number of polymers now offer singly but which no single polymer yet has. We have assumed that all desirable polymers will be melt-extrudable because the melt extrusion process is the cheapest method for thin films which are the only ones that can possibly compete. We have assumed for all polymers the extrusion speeds that we expect but have not yet attained for polythene. The plant is assumed to be a 50 million pound economical unit, operating on one kind of film, which can be attained only by an unquestionably successful film.

Under these simplifying assumptions the direct investment in plants for all non-cellophane films becomes identical and the total investment for different films differs only by the effect of polymer price on working capital. Investment for a plant at two polymer prices as compared with that we expect for cellophane is shown in Table IV, page 12.

It is evident that cellophane's ability to compete against the lower investment in our hypothetical plant will depend entirely on the advantage it may have in cost.

Table IV

Investment per Pound of Cellophane Coverage Melt Cast Film vs Cellophane

	35¢/Lb. Flake	40¢/Lb. Flake	Cellophane
Permanent Investment	$0.13	$0.13	$0.26
Working Capital	0.14	[illegible]	0.09
Total Investment	$0.27	$0.29	$0.35

Cost comparisons likewise are simplified by the assumptions made for the hypothetical process and plant. Operating under them, the cost of converting all polymers to film is the same and the total cost for any film is this basic conversion cost plus the price of the polymer in question. All comparisons are made on an equal coverage basis as affected by density. This is done in Figure 4, which contains all we now know or can guess, with fact as a starting point, about the ultimate cost of non-cellophane films.

Figure 4.

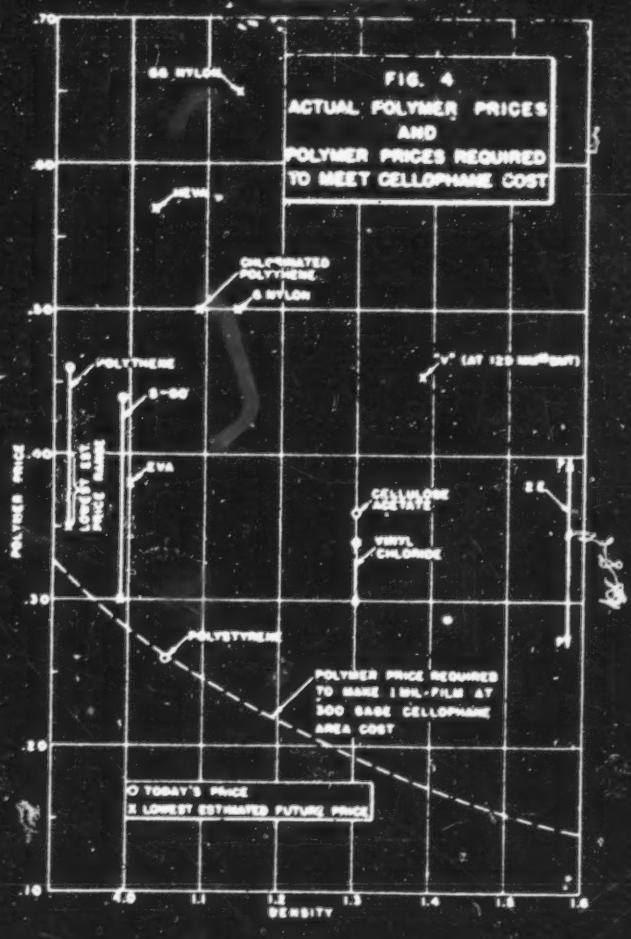

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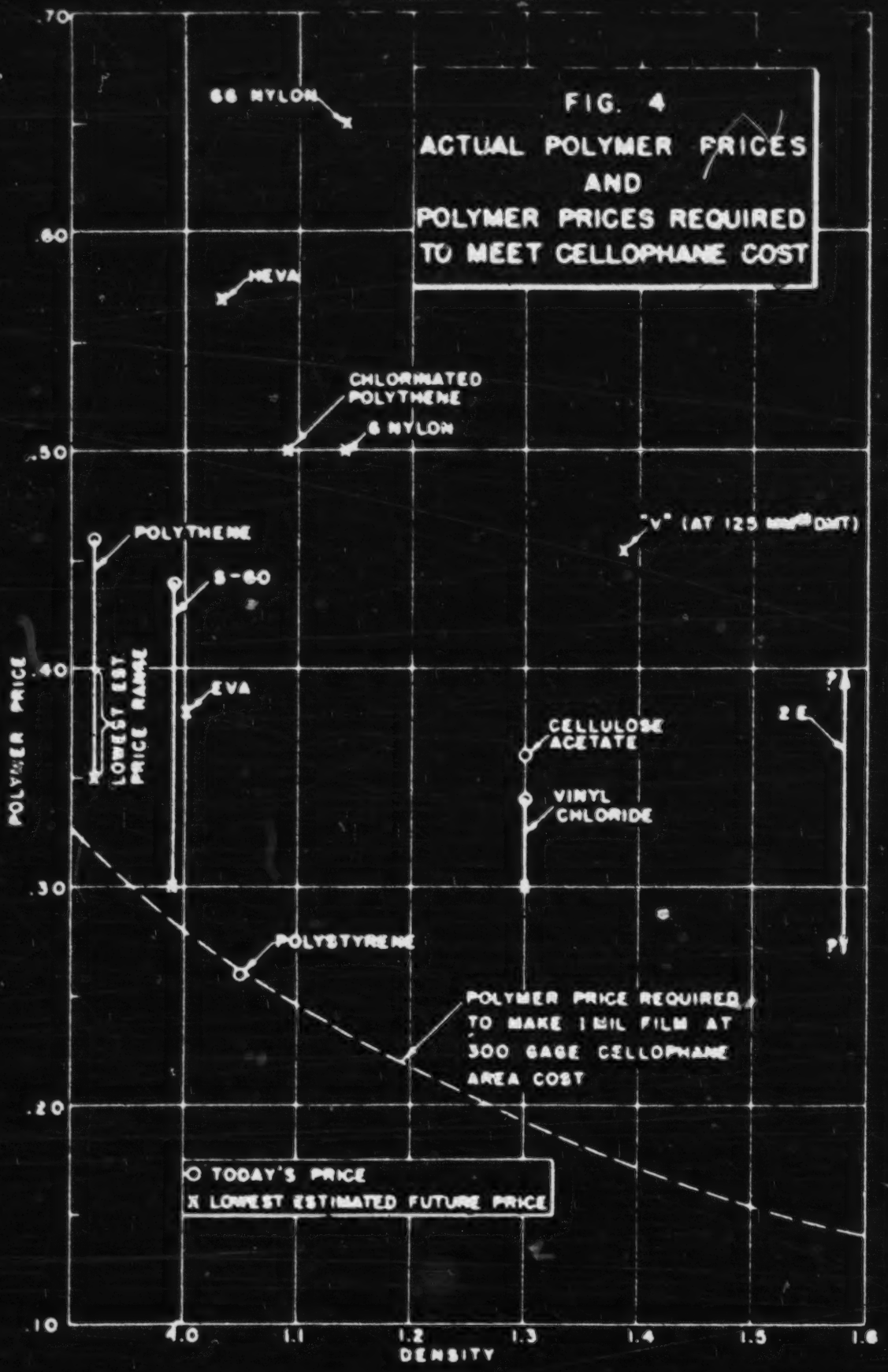
Figure 4.



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In Figure 4, the vertical axis indicates polymer price and the horizontal one polymer density. The plotted line represents the price that any polymer must have to be converted to film at the cost of 300 gage (nominal one mil thickness - actual 0.94 mil) cellophane per unit of coverage. Points in Figure 4 show today's polymer prices for potential competitors for cellophane and also the ultimate prices which we or their proponents are willing to forecast.

Polymers whose price falls above the plotted line can be made into films only at greater than cellophane cost. To make films at less than cellophane cost, polymer price must fall below it.

Three candidates closest to the line demand our consideration of their competitive quality and the probability of meeting the assumptions on processibility. These are polystyrene, S-60 polymer, and polythene.

Polystyrene price falls almost directly on the plotted line, indicating that if it could be cast into film at the speeds and efficiency and in the plant we have assumed, it could be made at cellophane cost. Actually it sells today in a specialized market at $2.00 per pound. We do not know why the price is so high nor how low it can actually go. In properties it is one of the most brittle of films and not a competitor for cellophane in its present form.

S-polymer (Enjay Corporation - isobutylene styrene) film, in the same ultimate polymer price range, may be considered plasticized polystyrene. When it contains enough isobutylene to overcome polystyrene brittleness its softening point is so low that its ability to be handled under commercial conditions the year round is questionable.

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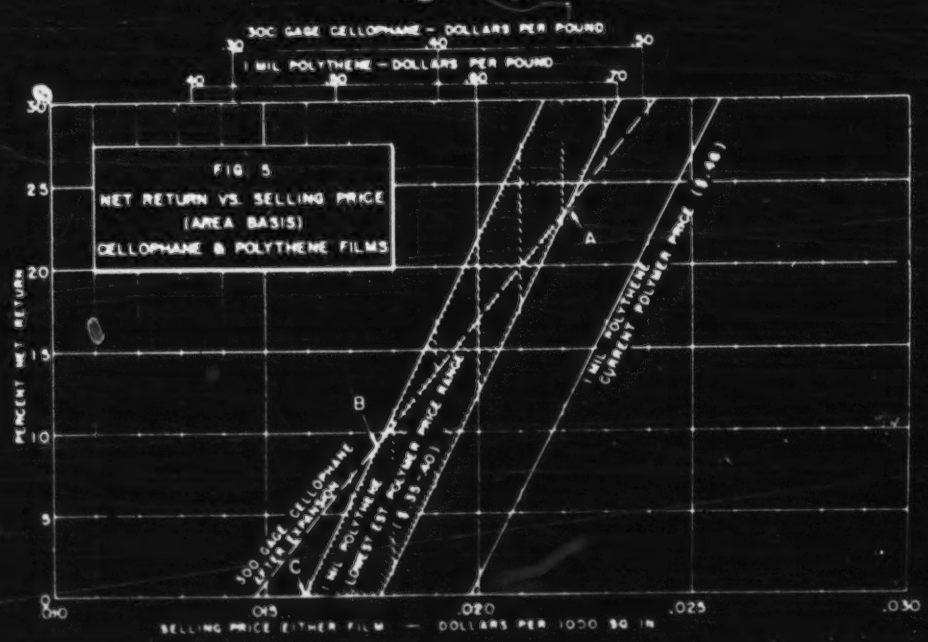
It is our considered opinion that these two films, without considerable modification, are not competitors at all for cellophane in major markets. As representatives of a class they deserve watching but with properties as they are and in the absence of better information on actual conversion costs we will not consider them further.

Polythene at its best predicted price is next in cost, lower than the present and approaching the most optimistic prediction for S-polymer. While it does not now resemble cellophane in clarity or stiffness and is being used only in films of 1.5 mil and greater thickness, it is a good commercial film, capable of being developed, and an analysis of its ultimate cost position should be indicative of the most competitive of non-cellophane films.

The lowest predicted price for polytnene flake is a range of $0.35 - $0.40 per pound as compared to today's price of $0.46. Using the calculated cost for film from flake at these prices and the investments shown in Table IV, page 12, the rates of return for cellophane and polythene films have been determined and plotted in Figure 5 over a price range as was done in Figure 3 (page 9) for cellophane competition.

Figure 5.



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In Figure 5, the net return is again shown on the vertical axis. Prices on the horizontal one are shown in cents, per 1000 square inches coverage for either film, thereby compensating for the difference in film density. The corresponding prices per pound for 300 gage cellophane and for one mil polythene are shown on horizontal scales on the top of the graph. The right-hand unbroken plotted line represents the return on one mil film made from $0.46 polythene flake. It is evident that at any expected price per unit coverage its return does not approach that for cellophane (broken line).

The shaded area in the figure represents the return position for polythene film from flake at the lowest predicted price ranging from $0.35 to $0.40. This area is bounded on the right by the return line for film from $0.40 flake and on the left by that for film from $0.35 flake. An inspection of point A shows that the return on film from $0.40 polythene flake can, at equivalent price, equal the return from cellophane if today's prices hold, but at any lower film price the cellophane return is the higher. Point B shows that if polythene flake reaches $0.35 per pound and can be made into one mil film which will give cellophane service, it can compete at a better return for a while longer; but cellophane will finally out-earn polythene when film price falls below $0.0175 per 1000 square inches which is equivalent to cellophane at $0.37 per pound. Finally, cellophane will still earn about 4% when, at point C, polythene starts losing money.

The comparison can be made of cellophane with other known but more expensive films by inspection of Figure 4, page 12, and will not be commented on further.

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The final question on competition is the possibility of new undiscovered polymers, which we and others are searching for, which might have competitive properties and might fall in the competitive price range. Will they be many, or will they be few? Though it is foolhardy to predict a figure below which price could not go, we think that they will be few. To get into the very low cost range will require volume production which in turn requires that any polymer must develop a market uniquely its own until it gains volume and lowers price so cellophane can be attacked. Styrene came to volume in a war-born industry in war-built plants, and S-polymer did much the same. Polythene, too, benefits from its initial war-time impetus. It can happen again but not indefinitely because the advent of each new polymer that is successful in any use outside of film cuts the probability that a good film-former will ride through to volume and low cost on some other development.

Without question developments in the non-cellophane films for cellophane markets should be carefully watched. There is no visible reason, however, why we should hesitate to support cellophane as a virile business into the foreseeable future.

Outlook and Program

The evident conclusion from the foregoing facts and speculations is that du Pont cellophane business will continue to earn an attractive return on its present capacity and on the expanded capacity that present cellophane markets will probably need.

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For a new money investment of $0.39 per annual pound, including working capital on which we will earn 28% net return, we can obtain up to 149 million pounds of increased capacity from our present plants as the market requires it. At the same time we will reduce cost of sales by $0.03 per pound and improve the net return on total cellophane investment from a current 20% to an ultimate 25%. When thus expanded, we can earn a better return than the competition we can now see over nearly all the price range that severest competition might dictate.

Expansion on this basis requires technical developments now planned and in process. These should be completed through the plant test stage to make ready for their adoption when capacity needs and replacement opportunities arise. The sales and capacity graph, Figure 2 (page 4), indicates that the time is adequate but not excessive for this make-ready before major capacity increases will be needed. These developments are:

Double-sheet casting machine. It is planned to convert a single machine to double-sheet at Old Hickory, and to evaluate the machine and process there. Authorization is forecast in the first quarter of 1950, and complete installation in the first quarter of 1951. This installation and evaluation are necessary whether we finally use new double-sheet machines which can be considered at Clinton and Old Hickory, or converted ones which are physically necessary, because of space limitations, at Yerkes and Spruance.

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Continuous xanthation. A scale-up unit is now being built at Spruance for start-up in June of 1950 for continuous plant-scale tests. This is a labor-saving advance in the Chemical Building, contributing to our improved cost position after expansion. The continuous xanthator is a part of plans for all plants and is physically necessary at Yerkes and Old Hickory because of space limitations.

Dispersion Coating. The design of the first plant unit is authorized and under-way. The machine should be installed at Old Hickory early in 1951 after which the process and equipment will be proved for adoption as the trade can absorb the output. Dispersion coating represents a major quality improvement and at the same time is lower in investment and cost than solvent-coating. Its use will improve our quality, cost and investment positions as we expand or as we replace obsolete coating equipment.

Continuous Steeping and Shredding Units. Alterations in equipment and operating pattern to speed up continuous steeping and shredding units to 30 pounds per minute are being investigated

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now in Spruance and Old Hickory Cellophane, as well as in the Yerkes Staple Plant. This advance contributes a part of the Chemical Building investment and cost saving in expanded plants.

Continuous VRR. Installation and evaluation of a continuous VRR side are forecast for authorization at the Spruance Plant in the fourth quarter of 1950. This is needed for expansion at all plants to overcome space limitations.

In addition, the more obviously advantageous work of speeding up equipment to reduce investment and cost should be pressed.

The general conclusions given herein are based on plans and calculations in detail showing the quantitative importance and application to each plant of these developments. These are given and fully discussed in the following part of this report.

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SURVEY OF CELLOPHANE FUTURE CAPACITY, ECONOMICS AND COMPETITION

PART II

PLANT PLANS, INVESTMENTS AND COSTS

This part of the report presents plans for capacity increases, with calculations of cost, investments and returns in sufficient detail to point up the technical needs of an adequate program and to guide the choice and execution of early expansion steps in harmony with an overall plan.

The procedure used in developing plans and estimates is presented here to aid the reader in weighing data and conclusions in this report. In naming the individuals who participated in the survey, we acknowledge their part in it and make accessible, for future reference, their specific viewpoints and opinions beyond those presented.

This survey was made, and the report written, when the Cellophane Division was a part of the Rayon Department. The survey was instigated by the Cellophane Division and its execution was made the responsibility of G. M. Karns. Work was coordinated under his direction, first by W. E. Neff and later by D. H. Edwards who, with the assistance of W. W. Hess, of the Development Section, assembled the final data and prepared this report. Market

data were supplied by H. P. Setter, of the Trade Analysis Group of Promotion and Advertising, Cellophane Division. Developments from these data were critically reviewed by R. R. Smith, Assistant Director of Sales, Cellophane Division. The forecast and distribution of films, by types, were prepared by G. C. Buchwald and W. J. Marshall, of the Cellophane Division Planning Section. Expansion for each plant was planned by a representative of that plant working as a member of the Survey Group. The group was assisted and guided in drawing its plans by suggestions of J. F. McCune and P. Van Horn. These plans were aimed not only at increased production, but they also recognized and sought correction of plant problems that inhibit efficient operation. The plans include "scopes of work" describing the construction changes in sufficient detail to make investment and cost estimates reliable. Plant representatives were H. R. Smith of Old Hickory; W. J. Sciutti, Jr. of Spruance; A. Tippo of Clinton; and Lyman Hardy of Yerkes. They were assisted by the Methods and Standards, Works Engineering, and Plant Technical Groups on their respective plants. These men also supplied work crews as a basis for cost estimates which were, in turn, made by J. W. Eakin and J. W. Allen, Jr., of the Cellophane Division Planning Section, Wilmington. Estimating work was done by O. W. Diverall and H. A. Russell, of the Engineering Department, who utilized specialists' services where needed. These were, notably, J. I. Hudson on power, and Lyman Cox on waste disposal. Summary work in the Technical Division - Development Section, was done by H. S. Horn and E. C. Page.

The accuracy of the investment calculations is deemed to meet Engineering Department standards for order-of-magnitude estimates. Cost calculations, insofar as

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process and operating assumptions hold, are firm by forecast standards.

The estimates are based on current wage rates, materials prices, and construction index. The assumptions are uniform between different processes on the same plant and between plants. This has made comparisons between figures more accurate than the absolute values themselves, and this accuracy of comparisons will continue to hold through changes such as labor rates, material and construction costs, etc., which will materially change the absolute cost and investment figures.

The processes assumed are technical advances beyond today's practice, but all of them have been proved sound in principle and each is in an advanced stage of development. The general assumptions which will apply to all plants are as follows:

Casting:

Since casting capacity constituted by far the largest single block of plant investment (31% of the total plant when building and associated equipment are included), it has been accepted as the dominating factor in fixing the ultimate capacity of each plant. The primary means for increasing casting capacity is by the use of double-sheet machines. Double-sheeting has, therefore, been applied to all machines operating on film types which run in large volume and which do not impose restrictions that would make successful double-sheet operation doubtful. This has excluded double-sheet machines for colored film at Yerkes, uncoated and heavy gage specialties at Yerkes and Old Hickory, and Type 5 machines at Spruance which do not lend themselves to this modification. At Yerkes and at Spruance, space limitations demand that double-sheet

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machines must be converted from single ones; at Clinton and Old Hickory, space is adequate for new double-sheet machines. The economics between them are sufficiently close that the choice must be decided on the basis of firm estimate at the time the expansion is finally considered.

Speeds assumed are 90 yards per minute for double-sheet machines and 111 yards per minute for single-sheet machines. It is recognized that higher speeds will come in both. These speeds are accepted as being able to supply, without doubt, film of standard quality. Cost and investment comparisons will not be invalidated through any probable speed increases which might be applicable to both. Speed increases will cut down the number of double-sheet machines needed to obtain the required capacity and the value of speed increase is established thereby.

Chemical Building

The continuous Chemical Building process referred to in this report consists of the following steps:

1. Continuous steeping of pulp in a tank of caustic solution equipped with an agitator. The action within the tank converts the mixture into a thick slurry which is continuously withdrawn and pressed into a blanket of alkali cellulose of the proper press weight ratio (caustic content).

2. Aging of the alkali cellulose in the form of broken chunks of blanket.

3. Continuously xanthating the aged alkali cellulose as it is carried through a closed chamber on a series of conveyor belts, followed by continuous mixing of the xanthate and caustic in a pug mill type mixer.

Step 2 is critical to this process, for the aging floor is the bottleneck which sets the maximum size of the Chemical Building. Without dense aging, this Building would have to be enlarged to process the amount of viscose required.

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The reduced shredding process used as an alternate at Spruance and referred to at Old Hickory consists of the following:

1. Conventional press steeping of pulp.

2. A short shredding cycle only long enough to break up the alkali cellulose into chips.

3. Aging the chips, which are much denser than the alkali cellulose crumbs produced by the conventional long-shredding cycle.

4. Xanthation in conventional barattes. The dense chips increase the weight capacity of the barattes.

5. Conventional mixing.

This process, too, relies on methods of increasing the density of the alkali cellulose to squeeze more viscost through present Chemical Buildings. It will not go nearly as far as the continuous process in conserving space, since it effects no economies in steeping and in mixing capacity.

Where space limitations dictated, continuous steeping and continuous xanthation equipment have replaced batch equipment. Where space is more generous, in order to limit investment, existing units are retained and continuous units added only to the degree necessary to supply the increased output. The return, which justified the continuous process in all cases where it is used, is only one of its advantages, the others being better safety and working conditions.

The Chemical Building process necessarily raises the issue of pulp supply, for some of the processes proposed place restrictions on the pulps. The processes elected at the various plants, with the alternates offered, provide sufficient latitude to assure supplies of the required pulp types.

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Viscose Ripening

The continuous process of viscose ripening increases capacity within the limited space. It provides for continuous transfer of viscose between ripening tanks, which permits the tanks to be maintained about 80% full. Conventional batch transfer limits average tank capacity to about half-full. Continuous viscose ripening requires continuous deaeration and constant rate filtration.

Coating

All of the expanded capacity is based on dispersion coating. At some plants, where coating equipment is most obsolete, these plans go farther by replacing this equipment with the dispersion type. To test the wisdom of this substitution, alternate processes are analyzed in which obsolete coating towers are replaced with new jet-type towers up to the installed solvent recovery capacity. Cost advantage lies with the dispersion coating process; the choice will depend on the acceptance of that film in the trade.

Waste Disposal

Waste disposal is set up to solve problems now recognized and to insure that increased volume or modified processes do not increase stream pollution.

The only problem new in kind, introduced by the expansion, is that of disposal of phenol stabilizer from dispersion coating ingredients. A theoretical solution has been found, its cost estimated and money included in trade waste estimates for each of the plants.

Power

Power is provided for the full increment of capacity expansion. This is done, fully recognizing that spare power might still be available when the time for expansion comes. This being true, it will greatly reduce the new money expenditure.

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EXPANSION DETAILS BY PLANTS

The following sections of the report, one for each of the plants, outline the process, equipment and layout changes visualized and predict their effect on cost, investment and return. They are in sufficient detail to inform the reader as to what will be done on expansion, and why. Details of how to expand each plant can best be had by referring to plant reports containing area production balances, scopes of work and labor crew and power estimates. These are on file with the Research Director, Manager of the Planning Section, and the Director of Production. A complete set, together with details of new money and write-off, is also on file in the Engineering Department. Complete sets of plant reports are on file at each of the plants.

SUMMARY

The financial outcome of expansion for each plant detailed in the following sections of the report is summarized in Table I.

TABLE I

Summary of Financial Results of Expansion by Plants

	Yerkes	Old Hickory	Spruance	Clinton
Present Capacity, MM Lbs.	22.6	52.7	55.5	64.0
Capacity after Expansion, MM Lbs.	38.8	94.6	96.7	113.6
Capacity Increase - MM Lbs.	16.2	41.9	41.2	49.6
Present Cost of Sales $/Lb.	0.42	0.33	0.34	0.31
Cost of Sales after Expansion, $/Lb.	0.34	0.30	0.31	0.30
Present Investment, $/Ann. Lb.	0.32	0.24	0.26	0.25
Investment after Expansion, $/Ann. Lb.	0.28	0.24	0.27	0.25
Present Return	11%	21%	20%	25%
Return after Expansion	22%	27%	24%	27%
Return on New Money	31%	29%	26%	29%

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YERKES

Present Capacity 22.6 MM Lbs./Yr.	Expanded Capacity 38.8 MM Lbs./Yr.
Present Return 11%	Ultimate Return 22%
New Money $7.0 Million	Return on New Money 31%

General

Yerkes is the smallest of the four Cellophane Division Plants (8 casting machines vs. 16 at each of the other locations). It makes a high proportion of all small volume items, including all of the colored film. Much of the equipment is old and some of it less productive than newer machines. For these reasons, costs at Yerkes are $0.08 higher than the average for all plants and only a part of the higher cost is made up by the higher price of its special production. A well-planned expansion at Yerkes should, therefore, include modernization to increase the plant output to a more economical level.

In expanding and modernizing the Yerkes Plant, a number of circumstances peculiar to it influenced the choice of process and layout, as follows:

1. The volume of specialty films forecast for this location demanded 4 single-sheet casting machines. Since room is lacking in which to build new machines, this set the limit of capacity at the volume which could be produced on 4 single and 4 double-sheet machines.

2. The limited Chemical Building space required that at least a portion of the Chemical Building process be continuous, and a completely continuous Chemical Building was selected.

3. The continuous process requires a "free" pulp from which the caustic can be pressed readily. Brown pulp now used at Yerkes does not meet this requirement. The use of this pulp has been taken care of in plans for Spruance.

4. Calculations have been made on two arrangements for coating. One employs 100% dispersion coated film and the other a combination of solvent and dispersion coating in a ratio of about 3:2. Either of these alternates write

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off the present seven slow speed towers at Yerkes, replacing them with five new high speed coating units. The process in which both solvent and dispersion coating are combined uses three jet towers which go to the limit of existing solvent recovery capacity. The ultimate choice will depend on the acceptance of dispersion-coated film by the trade.

5. Finishing areas, both slitting and sheeting, are essentially adequate now for the expanded production. Shipping space is also adequate, with some double-decking of storage areas. Essential material storage capacity is expanded and finished product storage provided to permit production at a uniform rate throughout the year.

Within the above controlling limitations, two possible processes have been devised, costs calculated, and these are presented herein.

Process I

Process Equipment

The changes to process equipment for Yerkes Process I are shown in Table Y-I.

TABLE Y-I

Yerkes Equipment before and after Expansion

Process	Present Plant Capacity 22.6 MM#/Yr.	Expanded Plant Capacity 38.8 MM#/Yr.
Steeping	10 steeping presses	3 36" continuous steeping units
Shredding	10 shredders	None
A.C. Aging	145 Colsen cans	145 Colsen cans
Xanthation	14 350-gal. barattes	2 continuous xanthators
Mixing	5 French mixers - 6 vissolvers	2 continuous mixers
Viscose Ripening	Batch system	Batch system with continuous deaeration
Casting	8 single-sheet machines	4 single-sheet machines 4 double-sheet machines
Coating	7 solvent towers	5 dispersion coaters
Slitting	11 slitting machines	11 slitting machines

Note: A portion of the Chemical Building equipment, now assigned to "Cel-O-Seal" is not included in this table. It will be maintained in its present form after expansion.

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Power

The increased power required to supply the expanded plant, as estimated by Yerkes Works Engineering, is shown in Table Y-II. These requirements were translated into investment by power specialists of the Engineering Department and are included in new money.

TABLE Y-II

Increased Power and Facilities Required - Yerkes Plant

	Present Capacity	After Expansion	% Increase
Steam (150# & 20#) (#/Hr.)	82,400	134,800	64
25 Cycle Electricity (kw)	1,278	1,544	21
Compressed air (cfm)	335	455	36
Refrigeration (tons/day)	178	212	19
Soft water (gpm)	539	760	41
Filtered water (gpm)	349	444	27
Raw water (gpm)	700	1,050	50

Trade Waste Disposal

The general problem of stream pollution is now under review with New York State authorities. Although requirements are not yet defined, the Engineering Department trade waste specialist estimates that $65,000 is adequate for facilities to treat wastes, caused by this expansion, including dispersion coating stabilizers in any way in which the State Commission is likely to require. This amount has been included in all estimates.

Building and Rearrangements

The effect of the planned changes on plant layout is shown in Figure 6 in which the present plant layout is shown on a photostat and the changes on a transparency. Combined, they show the layout of the plant after expansion. (Layout shown is for Process II. Equipment changes for preferred process are the same except in the Coating Area, as explained.)

The amount of new building required at Yerkes, as can be seen in the layout, is small. The first floor

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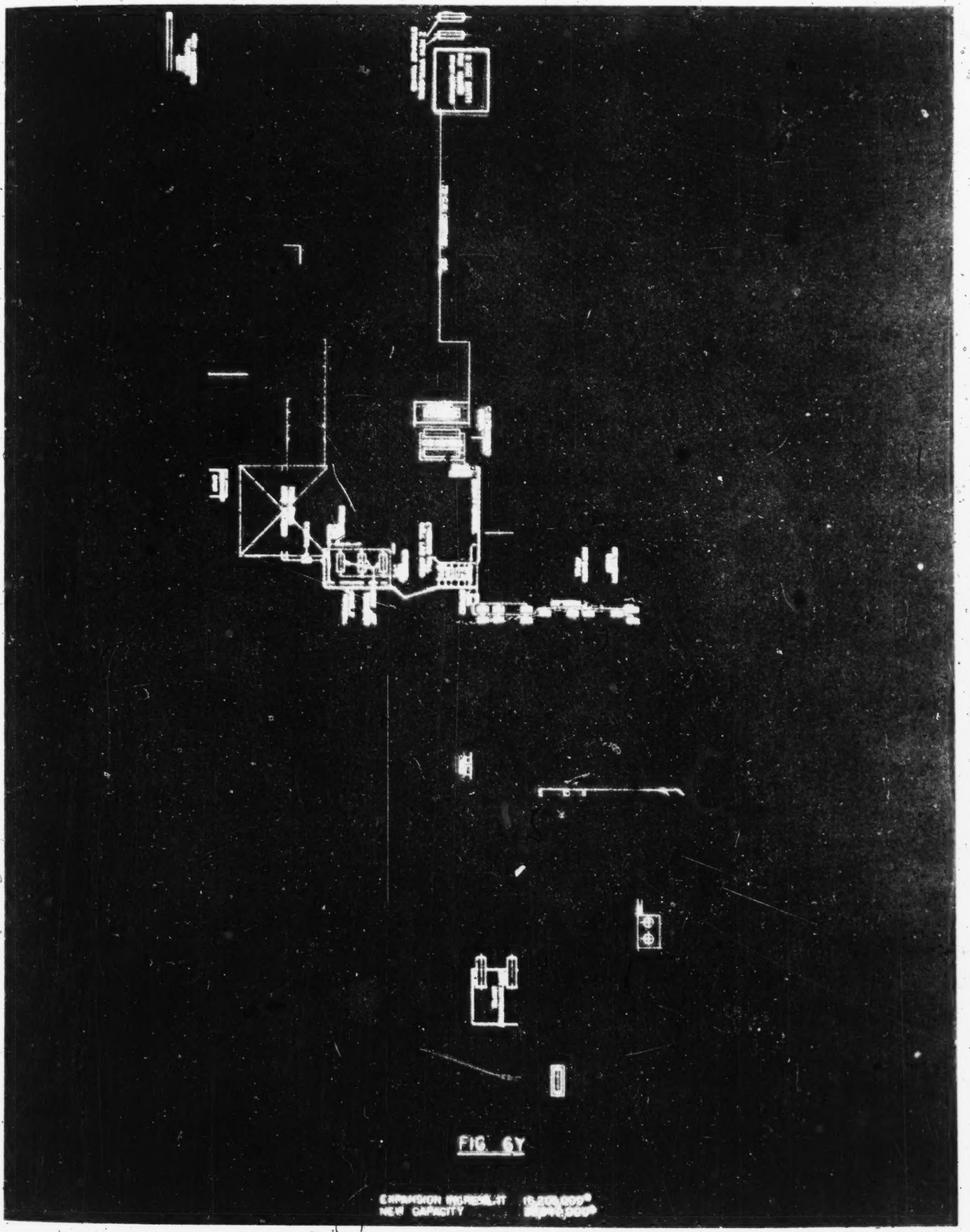

FIG 6Y

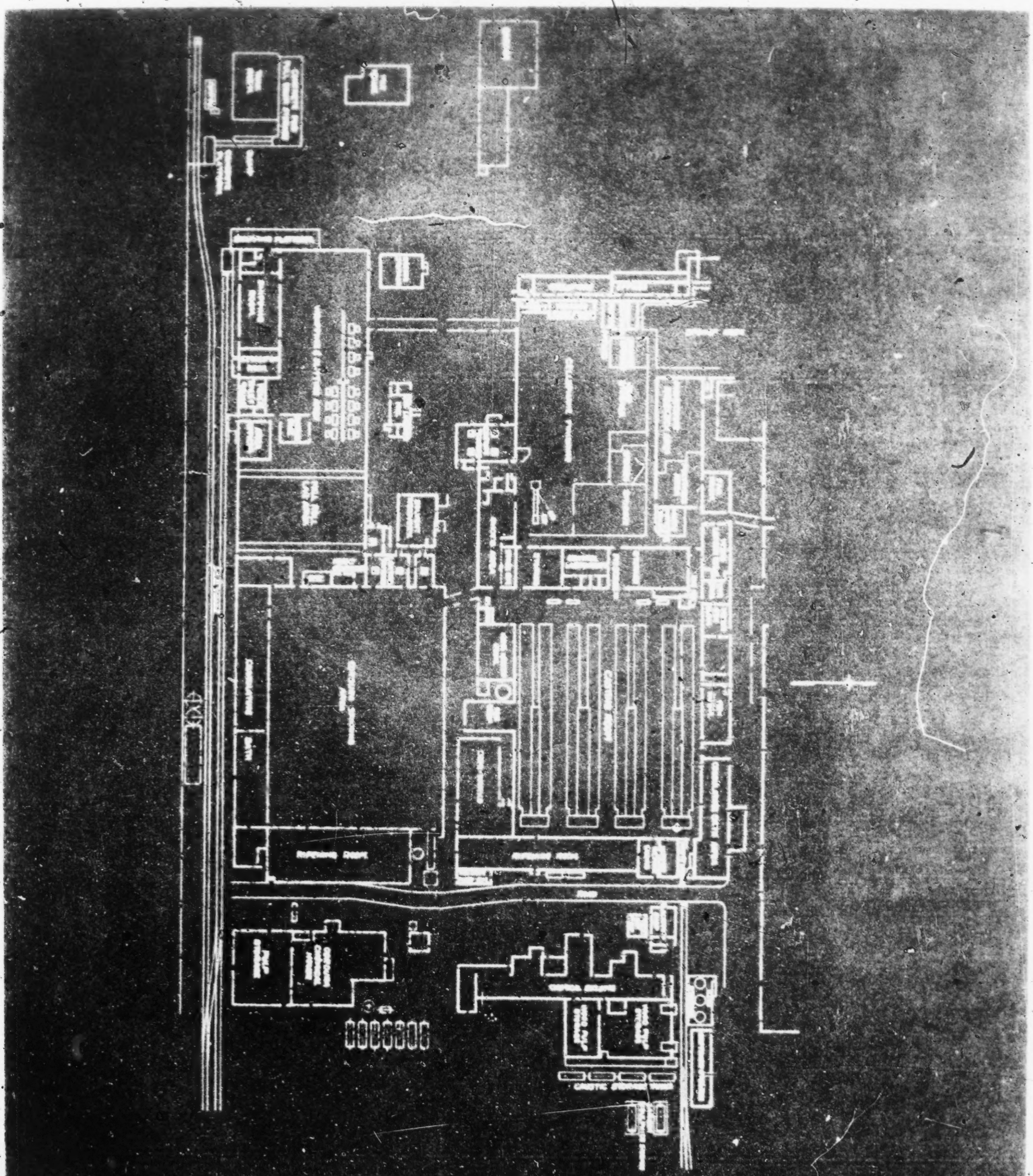

FIG. 6

YERKES PLANT

PRESENT CAPACITY . . . . 22,836,000#

addition to the Chemical Building increases that area by about 7%. Present Coating Area Buildings are unsuitable for the expanded plant and will be replaced, but the new buildings, adequate for the larger production, will be smaller than the present ones. Viscose Ripening, Casting, Finishing and Shipping Areas are unchanged.

Labor

In the Chemical Building, where process changes have a greater effect on labor than elsewhere, the number of operators will be less after expansion than now, the present number being 77 and the estimated number after expansion, 55. Displaced operators will be absorbed in other processes, however; the net effect of expansion being to increase the force from 370 now to 439.

Cost, Investment and Return

The new money required, broken down by areas, and its effect on permanent investment is shown in Table Y-III. Its net effect is a reduction in permanent investment per annual pound of $0.037.

TABLE Y-III

Yerkes Process I - Permanent Investment Summary

	Present Investment		New Money		Net Inv. After Expansion	
	M of $	$/Ann.Lb.	M of $	$/Ann.Lb.	M of $	$/Ann Lb.
Chem. Bldg.	623	0.027	922	0.057	1,174	0.030
Visc. Ripen. Room	198	0.009	366	0.023	512	0.013
Cast. & Coag. Bath	1,974	0.087	2,041	0.126	3,748	0.097
Coat. & Solv. Recovery	1,040	0.046	1,214	0.075	1,262	0.033
Finish & Ship.	792	0.035	356	0.022	990	0.025
Essential Matl.Storage	17	0.001	58	0.004	73	0.002
(Serv. Facil. (Power-Direct	1,629	0.072	620	0.037	2,235	0.058
(Power-Allocated Other Allocated	955	0.042	-	-	955	0.024
Total	7,228	0.319	5,577	0.344	10,949	0.282

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Write-off amounting to $1,325,000 and dismantling and protection to operations amounting to $531,000 are reflected in these figures.

New money needed in the Chemical Building ($0.057 per annual pound) replaces all batch steeping, shredding, xanthation and mixing with continuous processes. Because the entire Chemical Building is changing to continuous operation, new money requirement per annual pound is higher than at any other plant. It is justified over the existing process or alternates on the basis of return. New money of $0.075 in coating and solvent recovery is also highest of any plant because in Process I present solvent coating is completely supplanted and, in Process II, present coating towers are completely replaced. Finishing, shipping and services are less costly than at other locations, because these items at Yerkes now have a greater margin over minimum requirements.

Perhaps the most significant effect of the expansion at Yerkes is a reduction of almost $0.07 per pound in manufacturing cost. The breakdown of this cost (estimated by the Cellophane Planning Section) is given in Table Y-IV.

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TABLE Y-IV

Estimated Manufacturing Cost Before and After Expansion

	Before Expansion $/Lb.		After Expansion $/Lb.		Difference $/Lb.	
Total Materials	0.203		0.192		0.011	
Total Lab. & Exp.	0.076		0.049		0.027	
Direct Cost		0.279		0.241		0.038
Misc. Credits	0.001		0.001		-	
Net Factory Cost		0.278		0.240		0.038
Power	0.030		0.018		0.012	
All Other Plant Burden	0.047		0.033		0.014	
Total Plant Burden		0.077		0.051		0.026
Gross Factory Cost		0.355		0.291		0.064
Mfg. Expense	0.007		0.004		0.003	
Depreciation	0.016		0.015		0.001	
Other Gen. Burden	0.016		0.016		--	
Total General Burden		0.039		0.035		0.004
Total Mfg. Cost		0.394		0.326		0.068

A part of these savings do not represent a real improvement in the Division's position because they result from the dilution of high cost specialties which sell at a correspondingly higher price. The major part of the $0.011 per pound saving in materials reflects this factor but also includes the lower cost of dispersion coating ingredients. Real saving in labor and expense of $0.027 per pound results from reduced Chemical Building labor, elimination of solvent recovery and greater productivity in casting and coating. Power accounts for another $0.012 and reduced unit burden makes up the balance.

The calculation of the return on new money for the Yerkes Plant is shown in Table Y-V.

TABLE Y-V

Return on New Money - Yerkes Plant

	Proposed Expansion	
Added Annual Production (Millions of Pounds)	16.2	
New Money Expenditures	**$(MM's)**	**$/Ann. Lb.**
a) For Permanent Investment	5.0	0.31
b) For Depreciation and Operations	0.5	0.03
c) For Working Capital	1.4	0.09
Total New Money	6.9	0.43
Net Earnings after Expansion	3.2	
Present Net Earnings	1.1	
Net Earnings Applicable to New Money	2.1	
Net Return on Total New Money	31%	

This return of 31% is the highest earned by any of the four Cellophane Plants. The effect of the expansion on the return on investment is shown in Table Y-VI.

TABLE Y-VI

Summary of Investment, Cost and Return

	Present Operation		After Expansion	
Annual Production (Millions of Pounds)	22.6		38.8	
	$(MM's)	**$/Lb.**	**$(MM's)**	**$/Lb.**
Permanent Investment	7.2	0.32	11.0	0.29
Working Capital	2.6	0.12	4.0	0.10
Total Investment	9.8	0.44	15.0	0.39
Sales (100% of Cap.)	11.5	0.51	19.6	0.50
Cost of Sales	9.5	0.42	13.5	0.34
Operative Earnings	2.0	0.09	6.1	0.16
Net Earnings - (7.7% AOE - 43% Tax)	1.1	0.05	3.2	0.08
Net Return on Total Investment	11%		22%	
Turnover	116%		131%	

The return at this plant (which is now lower than that of any other plant) shows a greater improvement than any of the other three locations.

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Process II

This process will be used in preference to Process I, if acceptance of dispersion-coated film will not support complete substitution of the new product for the old. It would produce solvent-coated and dispersion-coated films at Yerkes in a ratio of about 3:2 rather than all dispersion-coated film. The two processes are compared below:

Process II	Process I
Dismantle and write off the present seven slow speed coating towers. Replace with three high-speed jet towers and two dispersion coaters. Use existing solvent recovery area and batch mix facilities with the solvent towers.	Dismantle and write off the seven slow speed towers, solvent recovery and bath mix equipment. Replace with five dispersion coaters.

The new money required, cost of sales and return on new money are compared in Table Y-VII.

TABLE Y-VII

Comparison of Process I and Process II at Yerkes

	Process I 5 New Dispersion Coaters	Process II 3 New Solvent Towers + 2 New Dispersion Coaters
New Money - $/Ann. Lb.	0.429	0.456
Cost of Sales - $/Lb.	0.347	0.357
Return on New Money	31.1%	26.4%

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Return on new money is almost 5% better on the dispersion process, and Process II could be dropped at once if it were certain that the new film could be completely substituted for nitrocellulose-coated film. The extent to which this substitution can be made will dictate the choice between the processes, and both are therefore included in this report.

Other Alternate Processes

A third process, based on a combination of continuous and batch Chemical Building, was examined at Yerkes. It was dropped, after its cost and return were determined to be inferior to those of Process I.

Process Elements to be Developed

The following processes, not yet completely developed or not operating at the rates assumed in this study, are required for the Yerkes expansion. Where the rates are in question, Yerkes required rates are shown.

1. Continuous steeping at a minimum rate of 27 pounds per minute of dry pulp per machine.

2. Alkali cellulose aging in dense form (1.7 times density of normally shredded alkali cellulose.

3. Continuous xanthation and mixing.

4. Continuous deaeration of viscose.

5. Double-sheet casting at 90 ypm.

6. Dispersion coating at 220 ypm.

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OLD HICKORY

Present Capacity 52.7 MM Lbs./Yr.	Expanded Capacity 94.6 MM Lbs./Yr.
Present Return 21.2%	Ultimate Return 26.8%
New Money $16.3 Million	Return on New Money 29.0%

General

The problem in obtaining increased capacity and optimum return at Old Hickory involves modernization as well as expansion. Much Old Hickory equipment dates back to 1929 and 1930, when these plants were built. The eight casting machines in Plant I are restricted to the use of 82" wide hoppers vs. 88" hoppers on all other machines in the Cellophane Division. They require greater maintenance and run at lower speeds. Plant I coating towers are also slow in speed and cannot now handle full width film made with 88" hoppers.

The arrangement of the two plants with an open area between them is not good. It separates the Finishing Areas; sheeting operations being in Plant I and slitting in Plant II. Shipping is also split between the plants; sheets being shipped from Plant I and slit rolls from Plant II. Moreover, shipping space is inadequate to accommodate the present volume of the production of these plants.

Improvement in these conditions, as well as expansion of output, is recognized in the considerations that led to the choice of equipment and layout used in the Old Hickory expansion, which are:

1. Modernization and expansion may be accomplished most advantageously in Plant I, which has the most obsolete equipment. Most of the expansion will be made there.

2. The scheduled volume of PT, PUT, and heavy gage films required 4+ casting machines.

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leaving 11 machines which may be converted to double-sheet. This (11 double-sheet, 5 single-sheet machines) is the basis of Process I.

3. Since room adjacent to Plant I Casting Area can be made available for additional machines under certain conditions, expansion by means of new double-sheet casting machines rather than conversion is considered in Processes III and IV. Investment and return figures for the competing processes are made comparable by selecting the number of new machines which comes closest to giving the same production as Process I. Choice between these processes will rest on availability of space for new machines at expansion time and the urgency for modernizing Plant I casting equipment.

4. Plant I Chemical Building space being limited, its capacity is increased by substitution of the continuous process. Plant II Chemical Building is changed only by the addition of one baratte which breaks a bottleneck in that area.

5. Plant I Viscose Ripening Area is made continuous to get the required volume of viscose through. Even with this process change some expansion of area made possible by relocation of the Hopper Shop is required.

6. We offer two alternates in coating, one of which converts Plant I completely to the dispersion process, the other of which retains the present coating equipment and adds dispersion coating only for the expansion increment. Choice between them will depend on the acceptance of dispersion-coated film.

7. Finishing and Shipping Areas, being now too small and split between the two plants, will be consolidated and enlarged by enclosing the area between the plants. This plan also streamlines the flow of material and provides a unified Maintenance Shop. Essential material storage capacity is enlarged and finished product storage provided.

Process I

Process Equipment

Expansion changes for Process I are shown in Table OH-I.

TABLE OH-I

Old Hickory Equipment before and after Expansion

Process	Present Plant Capacity 52.7 MM#/Yr.	Expanded Plant Capacity 94.6 MM#/Yr.
Steeping		
Plant I	16 steeping presses	4 36" continuous steeping units
Plant II	2 36" continuous steeping and shredding units	2 36" continuous steeping and shredding units
	10 presses	10 presses
Shredding		
Plant I	13 shredders	None
Plant II	9 shredders	9 shredders
A.C. Aging		
Plant I	199 Colsen cans	199 Colsen cans
Plant II	245 Colsen cans	245 Colsen cans
Xanthation		
Plant I	15 barattes	3 belt xanthators
Plant II	3 large barattes	4 large barattes
	15 small barattes	15 small barattes
Mixing		
Plant I	11 French mixers	
	4 Vissolvers	3 continuous mixers
Plant II	11 mixers	11 mixers
	3 disintegrators	3 disintegrators
Visc. Ripen.		
Plant I	Batch process	Continuous process (Area expanded about 40% within present buildings)
Plant II	Batch process	Batch process
Casting		
Plant I	8 single-sheet machines	8 double-sheet machines
Plant II	8 single-sheet machines	5 single-sheet machines 3 double-sheet machines
Coating		
Plant I	6 solvent coating towers	6 dispersion coaters
Plant II	2 Jet towers	2 Jet towers
	4 Non-jet towers	4 Non-jet towers
Slitting		
Plants I and II	6 Cameron slitting machines converted to shear cut	6 standard shear cut slitting machines
	6 standard shear cut slitting machines	8 new Clinton type slitting machines

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Power

The power and service facilities will be expanded to take care of the increased demands shown in Table OH-II. New money is included to cover all of the increase. This does not take into account the fact that some excess power is available now because it is uncertain that the excess will still exist at the time expansion is made.

TABLE OH-II

Old Hickory Power Requirements (Average Yearly)

	Present Capacity	After Expansion	% Increase
Steam (10# & 170#) (#/Hr.)	139,300	220,100	58
60 Cycle Electricity (kw)	3,422	5,707	67
Compressed air (cfm)	1,750	574	-67
Refrigeration (tons/day)	488	664	36
Soft water (gpm)	384	807	110
Service water (gpm)	972	1,350	39
Raw water (gpm)	2,336	2,720	16

Trade Waste Disposal

The stream pollution problem at Old Hickory is one of control of settleable solids which might interfere with navigation on the Cumberland River. To insure that this problem does not become more critical as a result of expansion, new money has been included for building a settling basin into which wastes will flow before going to the river. This basin may be integrated with a location-wide solids removal system rather than built by itself. Whether the basin is built by itself or becomes a part of a system to take care of the whole location, the plan is in accord with Engineering Department specialists' recommendations.

Building and Rearrangement

The changes outlined alter the layout to that of a single plant rather than two separate plants. The present plant layout, changes involved in expansion, and new plant layout are shown in Figure 7. Note that the new

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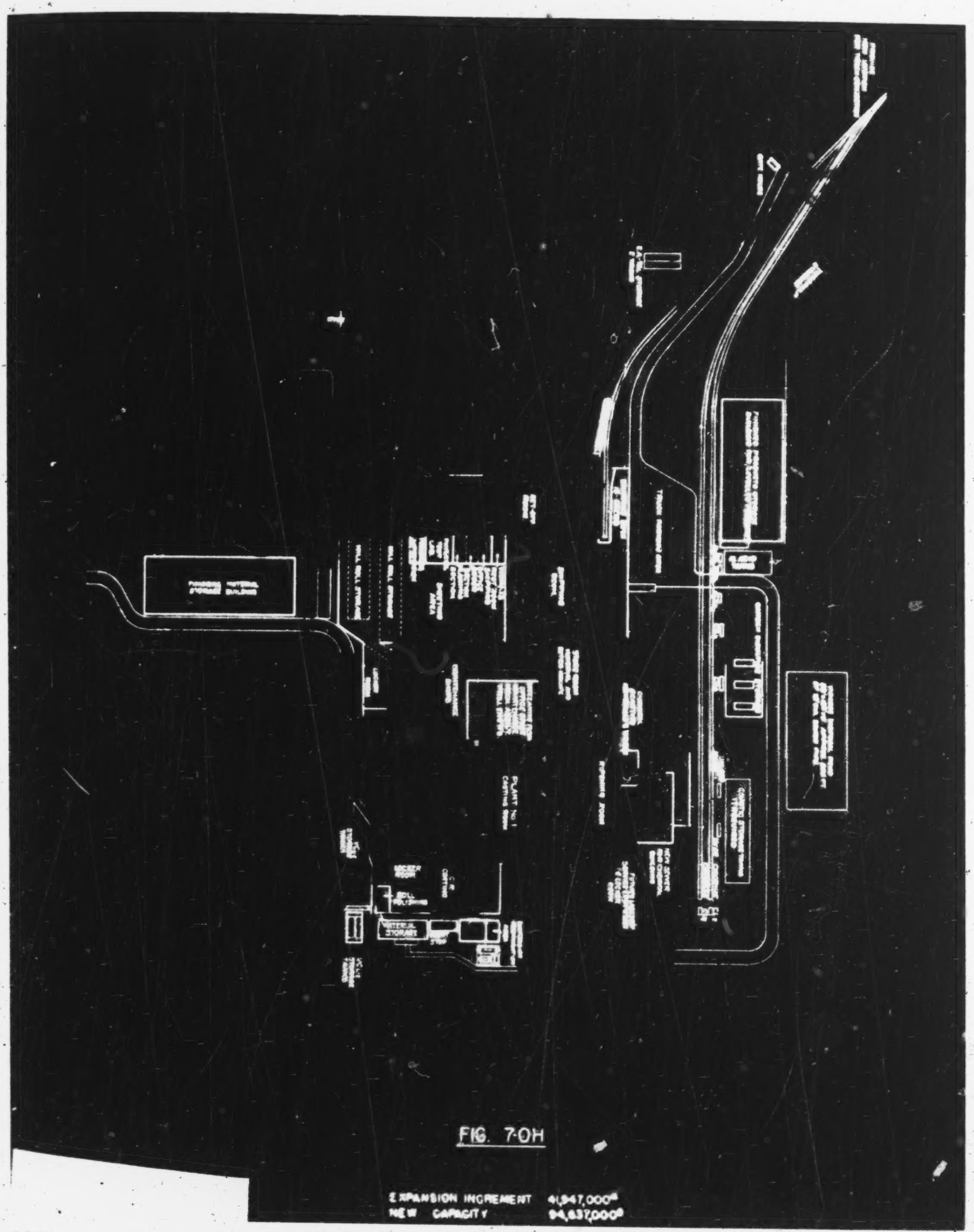

FIG. 7-0H

FIG. 7

OLD HICKORY PLANT

PRESENT CAPACITY . . . 52,690,000 #

layout requires the re-routing of rail and truck traffic to approach the plant from the rear rather than the front, because the approaches from the front are blocked to the Shipping Room and much of the Essential Material Storage Area. The change represents an over-all improvement because it separates rail and truck from pedestrian traffic and improves plant appearance.

The areas required for Chemical Building, Viscose Ripening and Casting operations are unchanged. Coating and Solvent Recovery Area is decreased 30%. The plan requires, however, dismantlement of some existing coating buildings and replacement with new structures. The Finishing and Shipping Areas are increased about 60%.

Labor

Chemical Building labor (Plants I and II) increases from 172 before expansion to 176 after. The total number of plant operators increases from 842 to 1100.

Cost, Investment and Return

Table OH-III shows the new money required for Old Hickory's expansion and its effect on permanent investment. The new money of $0.30 per annual pound leaves the permanent investment substantially unchanged at approximately $0.24 per annual pound after write-off.

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TABLE OH-III

Old Hickory Process I - Permanent Investment Summary

	At Completion of Currently Auth. Projects		Expansion New Money		Investment after Expansion	
	M of $	$/Ann.Lb.	M of $	$/Ann.Lb.	M of $	$/Ann.Lb.
Chem. Bldg.	1,623	0.031	1,277	0.030	2,393	0.025
Visc. Ripening Room	313	0.006	646	0.015	888	0.009
Cast. & Coag. Bath	3,567	0.068	5,325	0.127	7,904	0.085
Coat. & Solv. Recovery	1,888	0.036	1,460	0.035	2,773	0.030
Finish & Ship.	675	0.013	1,558	0.037	2,113	0.022
Essential Matl.Storage	186	0.003	326	0.008	512	0.005
Serv. Facil.	1,490	0.028	455	0.011	1,926	0.020
Power Direct	318	0.006	152	0.003	470	0.005
Power-Allocated	1,515	0.029	1,538	0.037	3,053	0.032
Other Allocated	1,049	0.020	-	-	1,049	0.011
Total	12,624	0.240	12,737	0.303	23,081	0.244

Write-off amounting to $1,712,000 and dismantling and protection to operations of $568,000 are reflected in these figures.

Expansion at Old Hickory will result in a reduction of $0.033 per pound in manufacturing cost. The breakdown of this cost before and after expansion is shown in Table OH-IV.

TABLE OH-IV

Old Hickory Estimated Manufacturing Cost Before and After Expansion

	Before Expansion $/Lb.		After Expansion $/Lb.		$/Lb. Difference
Total Materials	0.187		0.183		0.004
Total Lab. & Exp.	0.055		0.040		0.015
Direct Cost		0.242		0.223	0.019
Misc. Credits	0.001		0.001		-
Net Factory Cost		0.241		0.222	0.019
Power	0.016		0.012		0.004
All other Plant Burden	0.027		0.018		0.009
Total Plant Burden		0.043		0.030	0.013
Gross Factory Cost		0.284		0.252	0.032
Mfg. Expense	0.005		0.003		0.002
Depreciation	0.012		0.013		-0.001
Other Gen. Burden	0.014		0.014		-
Total General Burden		0.031		0.030	0.001
Total Mfg. Cost		0.315		0.282	0.033

About half of the reduction of $0.004 in cost of materials reflects savings in dispersion coating; the remainder results from a number of factors, the principal one being a change in the balance between types of production. Labor savings of $0.015 per pound result from the fact that the planned 80% increase in production will require only a 31% increase in the number of operators. The reduction in plant burden, the remaining major savings item, is due to spreading fixed costs over a broader base.

The return on new money at Old Hickory is 29%. Its calculation is shown in Table OH-V.

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TABLE OH-V

Return on New Money - Old Hickory Plant

	Proposed Expansion	
Added Annual Production (Millions of Pounds)	41.9	
New Money Expenditures	$(MM's)	$/Ann.Lb.
a) For Permanent Investment	12.1	0.29
b) For Depreciation and Operations	0.6	0.01
c) For Working Capital	3.6	0.09
Total New Money	16.3	0.39
Net Earnings after Expansion	8.6	
Present Net Earnings	3.8	
Net Earnings Applicable to New Money	4.8	
Net Return on Total New Money	29%	

This return on new money of 29% is the same as that of Clinton. It is intermediate between that of Yerkes which is higher, and Spruance, which is lower. The effect of expansion on return on investment is given in Table OH-VI.

TABLE OH-VI

Summary of Investment, Cost and Return

	Present Operation		After Expansion	
Annual Production (Millions of Pounds)	52.7		94.6	
	$(MM's)	$/Lb.	$(MM's)	$/Lb.
Permanent Investment	12.6	0.24	23.1	0.25
Working Capital	5.3	0.10	8.8	0.09
Total Investment	17.9	0.34	31.9	0.34
Sales (100% of Capacity)	25.0	0.47	44.7	0.47
Cost of Sales	17.8	0.33	28.5	0.30
Operative Earnings	7.2	0.14	16.2	0.17
Net Earnings (7.7% AOE - 43% Tax)	3.8	0.07	8.5	0.09
Net Return on Total Investment	21.2%		26.8%	
Turnover	140.0%		140.0%	

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Alternate Processes

Eight processes were looked at; more than were considered at any other plant. All will be outlined briefly but only three of them merit detailed examination. They will be considered in the order of their importance.

Process II

The effect of Process II would be to shift the proportion between solvent-coated and dispersion-coated films at Old Hickory in favor of the solvent-coated type. It will be the necessary choice, if more solvent and less dispersion-coated films are demanded at the time of expansion. This process compares with Process I as follows:

Process II	Process I
Retain 6 solvent coating towers in Plant I. Add 3 new dispersion coaters.	Dismantle all Plant I solvent coating tower equipment and add 6 new dispersion coaters.
(Solvent coated film - 170,000 #/day) (Dispersion coated film - 70,000 #/day)	(Solvent coated film - 100,000 #/day) (Dispersion coated film - 140,000 #/day)

Table OH-VII compares new money, cost of sales and return on new money.

TABLE OH-VII

Comparison of Process I and Process II

	Process I 6 New Dispersion Coaters	Process II 6 Existing Solvent Towers + 3 Dispersion Coaters in Plant I
New Money - $/Ann. Lb.	0.389	0.380
Cost of Sales - $/Lb.	0.301	0.303
Return on New Money	29.1%	29.1%

The financial results of these plans are almost the same. Process I has the advantage of replacing semi-obsolete equipment with new machines. The decision between

them must be made at the time of expansion on the basis of dispersion-coated film demand.

Process III

This process conserves new money by sacrificing some of the advantages of modernization contained in Process I. In it, new double-sheet machines are substituted for converted machines in one of the two plants where this choice may be open. The difference between Process III and Process I is as follows:

Process III	Process I
Expand casting capacity by building 5 new double-sheet casting machines east of present Plant I Casting Room. Space for this is available if Plant I coating is dismantled but requires some relocation of other areas.	Double-sheet 8 casting machines in Plant I, and 3 in Plant II.

The financial return of the processes is compared in Table OH-VIII.

TABLE OH-VIII

Financial Return of Process I vs. Process III

	Process I	Process III
New Money - $/Ann. Lb.	0.389	0.360
Cost of Sales - $/Lb.	0.301	0.303
Return on New Money	29.1%	30.1%

These comparisons are based on running PT, PUT and heavy gage films at slow speeds; and the better return of Process III holds only if low yield continues to limit output. When technical progress brings machine poundage on these specialties to approach that realized for 300 gage

film for coating, it will lift the return from Process I above that forecast for Process III.

Moreover, Process III does not solve the problem of widening and mechanically improving Plant I casting machines. [illegible]chines will not continue to run indefinitely wi[illegible]jor rebuilding; and the cost of such rebuilding added to the new money of Process III, will reverse the relative positions from that shown.

Recognizing that the problem of low speed production is being attacked, and that rebuilding of Plant I machines will soon be necessary, it would seem that initial steps toward Process I are well taken. It is on this basis that the first experimental converted machine is proposed for Old Hickory Plant I.

Process IV

Process IV is a compromise between Process I and Process III, retaining the advantages of modernizing Plant I casting machines with a part of the lower investment and correspondingly better return of Process III. It compares with Process I as follows:

Process IV	Process I
Convert 8 Plant I casting machines to double-sheet. No machines in Plant II to be converted but one new double-sheet casting machine to be added in an enlarged Plant I Casting Room.	Convert 8 casting machines in Plant I and 3 in Plant II to double-sheet.

The two processes are compared financially in Table OH-IX.

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TABLE OH-IX

Financial Returns of Process I vs. Process IV

	Process I	Process IV
New Money - $/Ann. Lb.	0.389	0.381
Cost of Sales - $/Lb	0.301	0.302
Return on New Money	29.1%	29.5%

Investment and return for this process are intermediate between Process I and Process III. Process IV solves the problem of rebuilding Plant I casting machines and results in a good Casting Room arrangement (8 single-sheet machines in Plant II, 9 double-sheet machines in Plant I). If space adjacent to Plant I Casting Area for this added machine is open at expansion time, this process is the better choice.

Other Alternate Processes

The probability of circumstances arising that would dictate the choice of any of the following processes is remote. They are included here for completeness. These processes (V through VIII) are compared with Process I as follows:

Process V	Process I
Replace 10 steeping presses in Plant II Chemical Building with 1 new continuous steeping unit.	Retain present steeping equipment of 2 continuous steeping machines and 10 steeping presses.

Process VI	Process I
Plate and frame viscose filtration in Plant I Viscose Ripening Room.	Dycalite filter aids and new type filter presses - Plant I Viscose Ripening Room.

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Process VII	Process I
Expand Plant I Chemical Building capacity by increasing building size using a batch process.	Continuous Plant I Chemical Building - no increase in building size needed.
Process VIII	**Process I**
Xanthation by ribbon blenders in Plant I Chemical Building.	Xanthation by continuous xanthators - Plant I.

Investment estimates for Processes V and VI were completed and are available if needed. They showed such small differences from Process I that cost and return position figures were omitted. The results of Processes VII and VIII, worked out for Spruance, proved that they were unattractive under Old Hickory conditions.

Process Elements to be Developed

Expansion by Processes I through VI at Old Hickory is dependent on the following developments. Processes VII and VIII require developments 4, 5, and 6 only.

1. Continuous steeping at 30 pounds of dry pulp per minute.
2. Alkali cellulose aging in dense form (1.8 times density of normally shredded alkali cellulose).
3. Continuous xanthation and mixing.
4. Continuous flow Viscose Ripening Room.
5. Double-sheet casting at 90 ypm.
6. Dispersion coating at 220 ypm.

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SPRUANCE

Present Capacity 55.5 MM Lbs./Yr.	Expanded Capacity 96.7 MM Lbs./Yr.
Present Return 19.6%	Ultimate Return 24.0%
New Money $17.1 Million	Return on New Money 26.1%

General

Of the four Cellophane Plants, Spruance is best adapted to early expansion. Early expansion steps should go in the direction of Process II, as later discussed. This, insofar as developments permit, is the direction in which the current ten million annual pound expansion is taking. Plans contained in this report were laid before this expansion was approved and are based on the plant as it exists today, rather than as it will be some months hence. Following are some aspects of the Spruance Plant that bear on the choice of processes planned:

The Chemical Building is the largest and has more steeping presses (40) than any of the other plants. It has six Type 5 casting machines which would be difficult and costly to double-sheet. Its Coating Area is relatively up-to-date; about two-thirds of its coated production is moistureproofed in high speed jet-type towers. Expansion plans at Spruance are based on the following facts and reasoning:

1. Plant capacity after expansion is based on the number of machines which can economically be converted to double-sheet, for space is lacking in which additional machines might be put. The Casting Room will have ten double-sheet and six single-sheet (Type 5) machines.

2. The large Chemical Building with generous steeping capcity, offers a clear field for expanded viscose capacity by several routes, two of which are presented in detail. The choice offered is between a high new-money low-cost process and a low new-money high-cost process. It will depend on pulp supply and

timing of the expansion, for the process which offers the best return is not the one which uses the most available pulp, nor is it the one closest to realization.

3. The Viscose Ripening Room must be made continuous, because of space limitations.

4. Present coating equipment will not be replaced. Additional coating capacity will be by the dispersion route.

5. Slitting space will be conserved by replacing present slitting machines with new machines of the Clinton type. The Sheeting and Shipping Areas will be enlarged as will storage facilities for essential materials. Finished product storage for leveling out production will be provided.

Process I

Process Equipment

Process equipment changes required for Process I at Spruance are shown in Table S-I.

TABLE S-I

Spruance Equipment before and after Expansion

Process	Present Plant Capacity 55.5 MM#/Yr.	Expanded Plant Capacity 96.7 MM#/Yr.
Steeping	40 steeping presses	6 continuous steeping units
Shredding	28 shredders	None
A.C. Aging	576 Colsen cans	576 Colsen cans
Xanthation	32 barattes	4 belt xanthators
Mixing	13 French mixers 13 Vissolvers 3 disintegrators	4 continuous mixers
Visc. Ripen.	Batch process	Continuous process
Casting	16 single-sheet machines	6 single-sheet machines; 10 double-sheet machines
Coating	5 Jet type towers 5 Non-jet type towers	5 Jet type towers 5 Non-jet type towers 6 dispersion coaters
Slitting	13 standard shear-cut slitting machines 2 Clinton type slitting machines	2 standard shear-cut slitting machines 13 Clinton type slitting machines

Power

The Spruance power facilities are at or near capacity at the present time. The estimated cost of this expansion includes money for the increased power and services shown in Table S-II.

TABLE S-II

Spruance Power Requirements (Average Yearly)

	Present Capacity	After Expansion	% Increase
Steam (30 and 150#)(#/Hr.)	136,500	206,700	52
60 Cycle Electricity (Kw.)	3,950	3,300	-16
Brine Refrigeration (tons/day)	507	425	-16
Soft water (gpm)	536	950	78
Filtered water (gpm)	1,210	1,800	49
Raw water (gpm)	1,725	3,220	87
Compressed air (cfm)	1,775	2,390	34

Trade Waste Disposal

Spruance now has facilities for acid neutralization of trade waste adequate for the projected expanded level. In addition to neutralization, elimination of solids is expected to become an issue later and a study of this problem on a location scale will be initiated this year. Settling basins similar to those projected at Old Hickory are expected to meet requirements and $100,000 has been allowed for this in the construction estimate.

Building and Rearrangement

Changes to plant layout are shown in Figure 8, which also shows the restrictions on casting space limiting expansion to the double sheeting route.

Space in the Chemical Building and Casting Areas is unchanged by expansion. Coating facilities after expansion will occupy 17% more space than they now do and Finishing and Shipping will be enlarged by 20%.

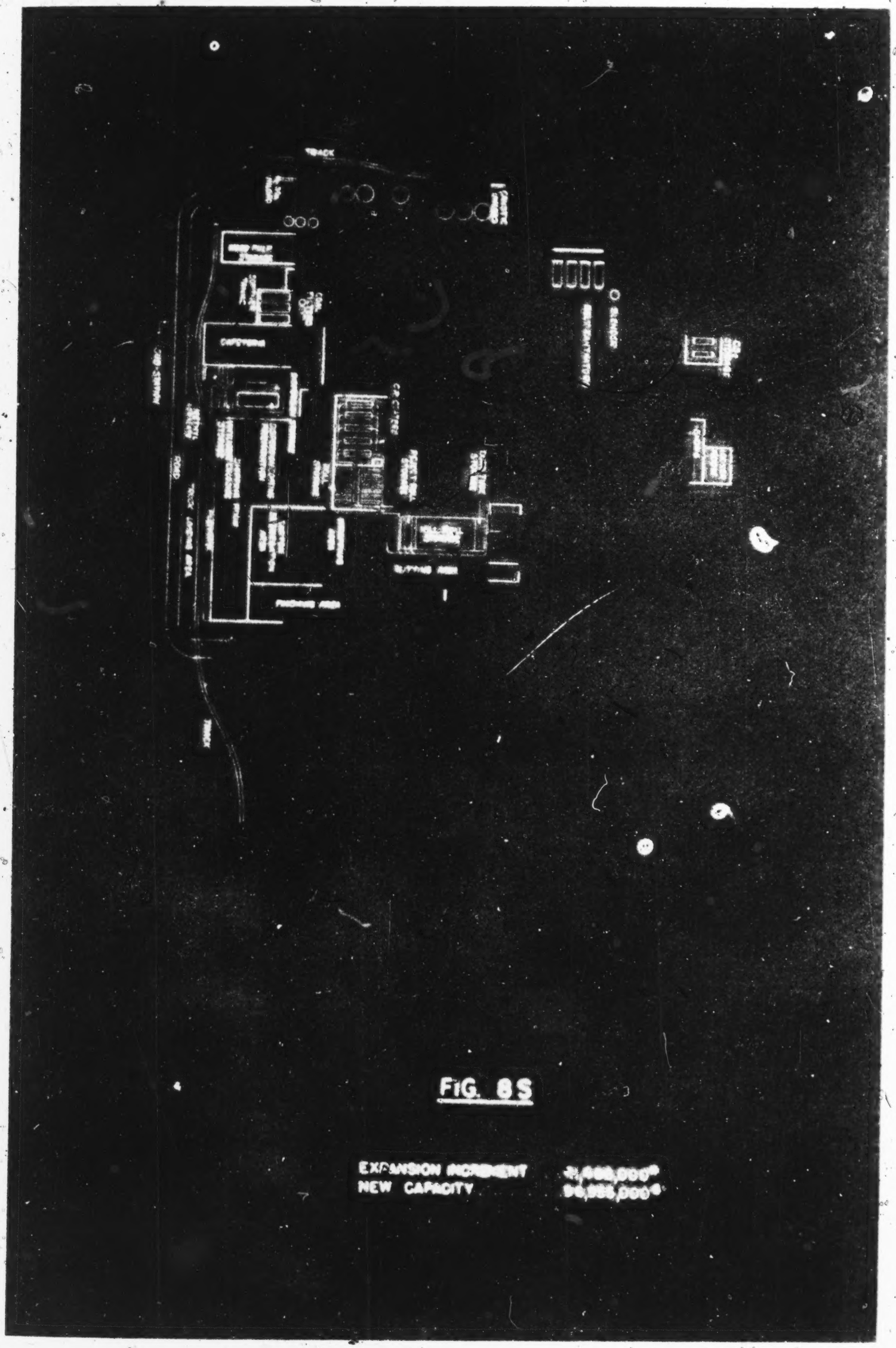

FIG. 85

EXPANSION INCREMENT
NEW CAPACITY

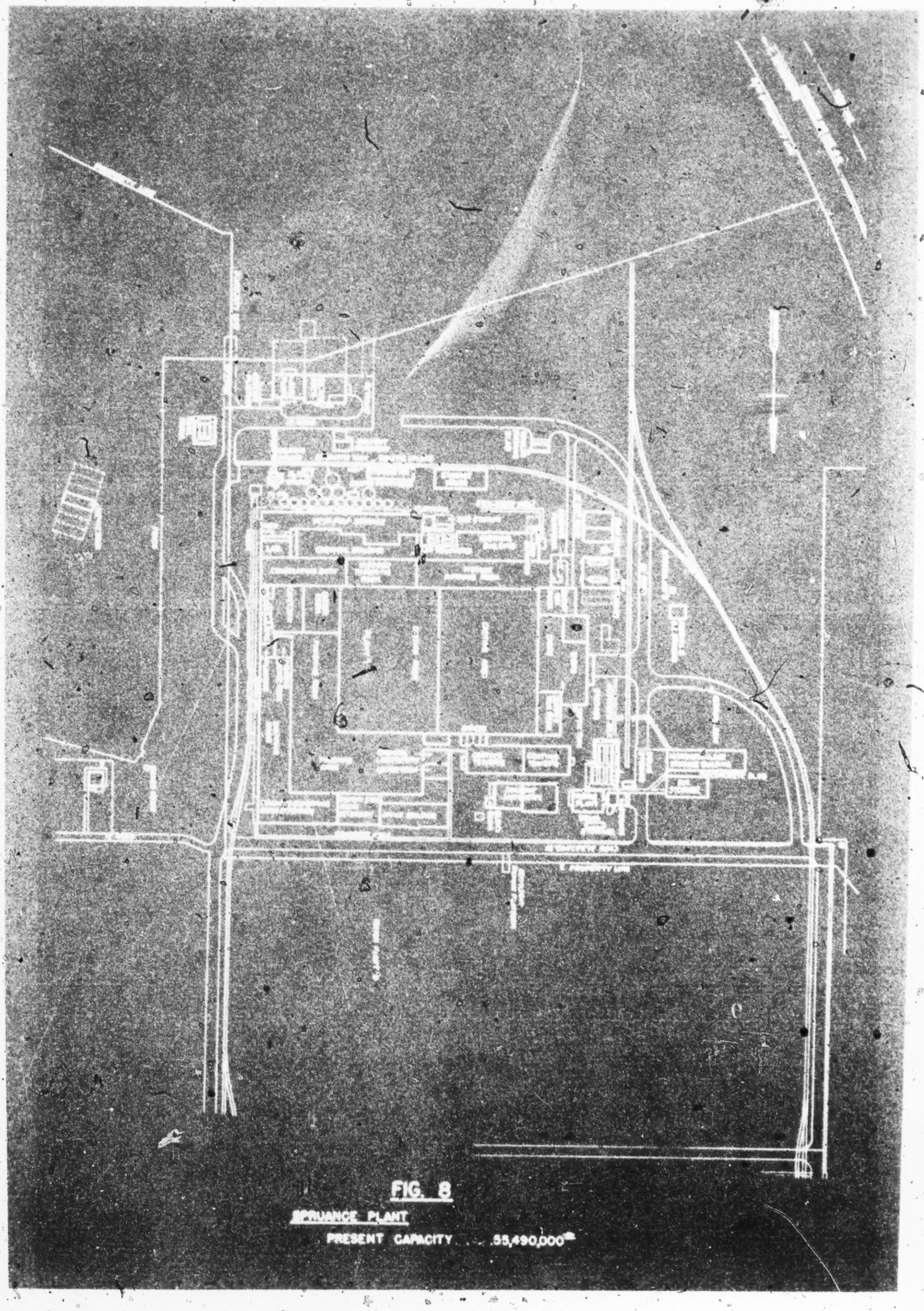

FIG. 8

SPRUANCE PLANT

PRESENT CAPACITY . . . 55,490,000 GPD

Labor

The increased viscose requirements after expansion will require less Chemical Building labor than we now use, the number of operators in this area being reduced in Process I from 169 to 90. Plant-wise, the number of operators will increase from 932 now to 1214 after expansion.

Cost, Investment and Return

The effect of the new money of approximately $0.33 per annual pound is to increase permanent investment by less than a cent per annual pound. This is detailed by areas in Table S-III.

TABLE S-III

Spruance Permanent Investment Summary

	Present Investment		Expansion New Money		Investment after Expansion	
	M of $	$/Ann.Lb.	M of $	$/Ann.Lb.	M of $	$/Ann.Lb.
Chem. Bldg.	1,883	0.034	1,690	0.041	2,384	0.024
Visc. Ripen. Room	579	0.011	954	0.025	1,366	0.014
Cast. & Coag. Bath	4,854	0.087	4,900	0.118	9,521	0.098
Coat. & Solv. Recovery	1,988	0.036	1,382	0.033	3,349	0.035
Finish & Ship.	765	0.014	1,738	0.042	2,165	0.022
Essential Matl.Storage	185	0.003	810	0.020	931	0.010
Serv. Facil.	1,065	0.019	528	0.013	1,547	0.016
Power Direct	220	0.004	304	0.007	484	0.005
Power Allocated	1,945	0.035	1,181	0.029	3,126	0.032
Other Allocated	935	0.017	-	-	935	0.010
Total	14,419	0.260	13,487	0.327	25,705	0.265

A write-off, amounting to $1,437,000 and dismantling and protection to operations of $764,000 are reflected in these figures.

The manufacturing cost at Spruance will be reduced after expansion by an estimated $0.024 per pound. The breakdown of this cost before and after expansion is shown in Table S-IV.

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TABLE S-IV

Spruance Estimated Manufacturing Cost Before and After Expansion

	Before Expansion $/Lb.		After Expansion $/Lb.		Difference $/Lb.	
Total Materials	0.185		0.185		0.000	
Total Lab. & Exp.	0.055		0.043		0.012	
Direct Cost		0.240		0.228		0.012
Misc. Credits	0.001		0.001		-	
Net Factory Cost		0.239		0.227		0.012
Power	0.018		0.014		0.004	
All other Plant Burden	0.024		0.017		0.007	
Total Plant Burden		0.042		0.031		0.011
Gross Factory Cost		0.281		0.258		0.023
Mfg. Expense	0.005		0.004		0.001	
Depreciation	0.014		0.014		-	
Other Gen. Burden	0.014		0.014		-	
Total General Burden		0.033		0.032		0.001
Total Mfg. Cost		0.314		0.290		0.024

Cost of materials is unchanged. Labor and expense are reduced $0.012 per pound (the number of operators at Spruance will be increased by 29% for 74% production expansion). Power savings of 0.004 and all other plant burden savings of 0.007 make up the balance of the cost reduction.

The new money position for the projected expansion is shown in Table S-V.

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TABLE S-V

Return on New Money - Spruance Plant

	Proposed Expansion	
Added Annual Production (Millions of Pounds)	41.2	
New Money Expenditures	**$(MM's)**	**$/Ann.Lb.**
a) For Permanent Investment	12.7	0.31
b) For Depreciation and Operations	0.8	0.02
c) For Working Capital	3.6	0.09
Total New Money	17.1	0.42
Net Earnings after Expansion	8.4	
Present Net Earnings	3.9	
Net Earnings Applicable to New Money	4.5	
Net Return on Total New Money	26.1%	

This new money return of 26.1% is lower than that from the other three plants. The return on plant investment is improved by 4.4% after expansion as shown on Table S-VI.

TABLE S-VI

Summary of Investment, Cost and Return

	Present Operation		After Expansion	
Annual Production (Millions of Pounds)	55.5		96.7	
	$(MM's)	**$/Lb.**	**$(MM's)**	**$/Lb.**
Permanent Investment	14.4	0.26	25.7	0.27
Working Capital	5.5	0.10	9.1	0.09
Total Investment	19.9	0.36	34.8	0.36
Sales (100% of Capacity)	26.1	0.47	45.9	0.47
Cost of Sales	18.7	0.34	30.0	0.31
Operative Earnings	7.4	0.13	15.9	0.16
Net Earnings (7.7% AOE - 43% Tax)	3.9	0.07	8.4	0.09
Net Return on Total Investment	19.6%		24.0%	
Turnover	131.0%		132.0%	

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Process II

This process differs from Process I only in the Chemical Building. It offers a route to early expansion for it is closer to realization than is Process I. Its effect is to make use of existing batch Chemical Building equipment rather than replacing it with continuous equipment. It differs from the normal batch process in that shredding is reduced to a very short cycle, thereby increasing the density of the alkali cellulose and increasing the weight capacity of aging cans and barattes.

This process is suited to Spruance conditions because Spruance has more Chemical Building equipment than any of the other plants. Moreover, the process works well with Brown Hardwood pulp, which Spruance now uses in part and, logically, should continue to use, because transportation from its source by water is economical. This pulp forms too tight a blanket after slurry steeping to work well in the continuous process and so will be displaced from Yerkes after they expand by the continuous steeping and shredding route. All the Brown pulp we now use, both at Yerkes and Spruance, will approximately meet Spruance's increased requirements after expansion.

The equipment needed for this process compares with that required for Process I, as follows:

Process II	Process I
Retain 40 presses and 28 shredders on 5th and 4th floors of Chemical Building. Increase building area slightly at the 3rd floor and add 22 Colsen cans. Add one	Remove present batch viscose equipment throughout and install 6 continuous steeping units and 4 continuous xanthators and mixers.

new baratte and 8 new dis-integrators on the 2nd and 1st floors, respectively.

If Process II is chosen as the expansion route, the number of Chemical Building operators increases from 167 now to 229 after expansion, rather than decreasing to 90 as it does in Process I.

The new money required, cost of sales and return for Process II are contrasted with those obtained in Process I in Table S-VII.

TABLE S-VII

Comparison of Process I and Process II at Spruance

	Process I	Process II
	Continuous Chem. Bldg.	Batch Chem. Bldg. with Short Shredding Cycles
New Money - $/Ann. Lb.	0.415	0.369
Cost of Sales - $/Lb.	0.310	0.317
Return on New Money	26.1%	25.0%
Return on Investment after Write-off	24.0%	22.7%

Process II trades cost for investment and from the standpoint of estimated returns is the less desirable bargain. Its choice may, however, be dictated by the urgency of expansion, for Process II is nearer realization, or by the scarcity of pulp suitable for the more attractive process.

Other Alternate Processes

A third process also concerned with the Chemical Building was examined at Spruance. It is the so-called "Ribbon Blender" process, developed by Viscose Rayon Research. It proved economically inferior to either Process I or Process II so will not be treated in detail.

DHE:fms

Process Elements to be Developed

Expansion by Process I at Spruance will require the following:

1. Continuous steeping at 29 pounds dry pulp per minute.
2. Continuous xanthation and mixing.
3. Continuous flow Viscose Ripening Room.
4. Double-sheet casting at 90 ypm.
5. Dispersion coating at 220 ypm.

Expansion by Process II will require:

1. Development of the reduced shredding viscose process using Brown pulp.
2. Continuous flow Viscose Ripening Room.
3. Double-sheet casting at 90 ypm.
4. Dispersion coating at 220 ypm.

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CLINTON

Present Capacity 64 MM Lbs./Yr.	Expanded Capacity 113.6 MM Lbs./Yr.
Present Return 24.8%	Ultimate Return 27.0%
New Money $17.3 Million	Return on New Money 28.8%

General

Clinton is the newest and most modern of the four Cellophane Plants. Its cost per pound of film is the lowest; as low as the average expected of all plants after expansion. The unit new money for Clinton's expansion is less than at other plants because less modernization is needed. The reduction in cost and improvement in return are real but correspondingly smaller.

Expansion plans at Clinton are based on the following considerations:

1. Double sheeting all existing casting machines or building new double-sheet casting machines was considered for casting expansion. The choice will be discussed later.

2. Present batch type Chemical Building equipment will remain in use as at present. Continuous equipment will be installed to provide for the increased viscose output. This requires a small building addition to all five Chemical Building floors.

3. Restricted space dictates the choice of a continuous viscose ripening process.

4. Dispersion coating will supply the increased coating capacity needed. Present solvent towers, which are all of the high speed jet type, will remain in operation.

5. Slitting capacity will be increased by adding more machines. Sheeting and shipping space and essential material storage capacity will be increased. Finished product storage will be provided.

Process I

Process Equipment

The changes to process equipment are shown in Table C-I.

TABLE C-I

Clinton Equipment before and after Expansion

Process	Present Plant Capacity 64 MM#/Yr.	Expanded Plant Capacity 113.6 MM#/Yr.
Steeping	32 steeping presses	32 steeping presses 3 continuous steeping units
Shredding	22 shredders	22 shredders
A. C. Aging	620 Colsen cans	645 Colsen cans
Xanthation	18 barattes	18 barattes 2 belt xanthators
Mixing	9 disintegrators	9 disintegrators 2 continuous mixers
Visc. Ripening	Batch process	Continuous process
Casting	16 single-sheet casting machines	16 double-sheet casting machines
Coating	8 solvent coating towers	8 solvent coating towers 5 dispersion coaters
Slitting	12 Clinton type slitting machines	18 Clinton type slitting machines

Power

Table C-II shows the effect of the expansion on yearly average power requirements.

TABLE C-II

Clinton Power Requirements

	Present Capacity	After Expansion	% Increase
Steam (20# & 150#) (#/Hr.)	144,000	225,000	56
60 Cycle Electricity (kw)	3,300	5,300	60
Compressed air (cfm)	900	1,030	15
Refrigeration (tons/day)	430	430	-
Soft water (gpm)	600	1,415	136
Well water (gpm)	2,600	3,650	40

Sixty-cycle power for this expansion will be purchased from the utility in that area. The steam and other services will be enlarged as required and new money is included in the estimate.

Trade Waste Disposal

Acidity of trade wastes is not a problem at Clinton because of the large volume flow of the Mississippi River into which they are discharged. Settleable solids are now removed from the Clinton wastes by settling basins,

partly natural, through which they flow. The Engineering Department trade waste specialist agrees that the capacity of the existing basins is adequate for the expanded level of production so no new money is provided for stream pollution abatement.

Building and Rearrangement

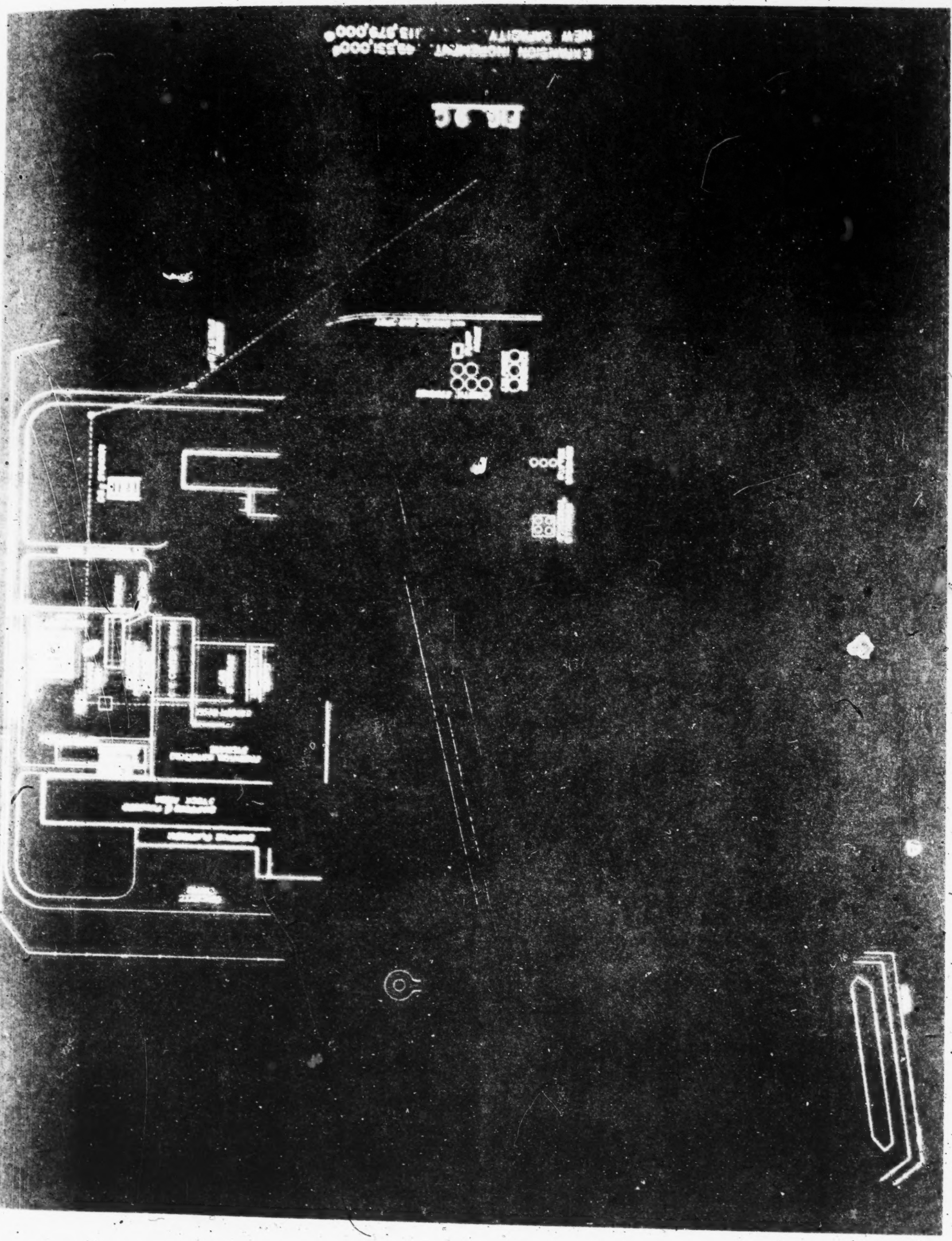
The effect of the planned changes on plant lay-out is shown in Figure 9. Chemical Building area is increased about 7%. Casting is unaffected but coating is increased 20% and the Finishing and Shipping Areas, taken together, are increased 80%.

Labor

Because none of the Chemical Building batch equipment is displaced with continuous equipment the Chemical Building labor is increased by expansion from 153 to 198 operators. Total labor force on the plant increases from 757 to 1218.

Cost, Investment and Return

The new money for expansion and its effect on investment in each area are shown in Table C-III.



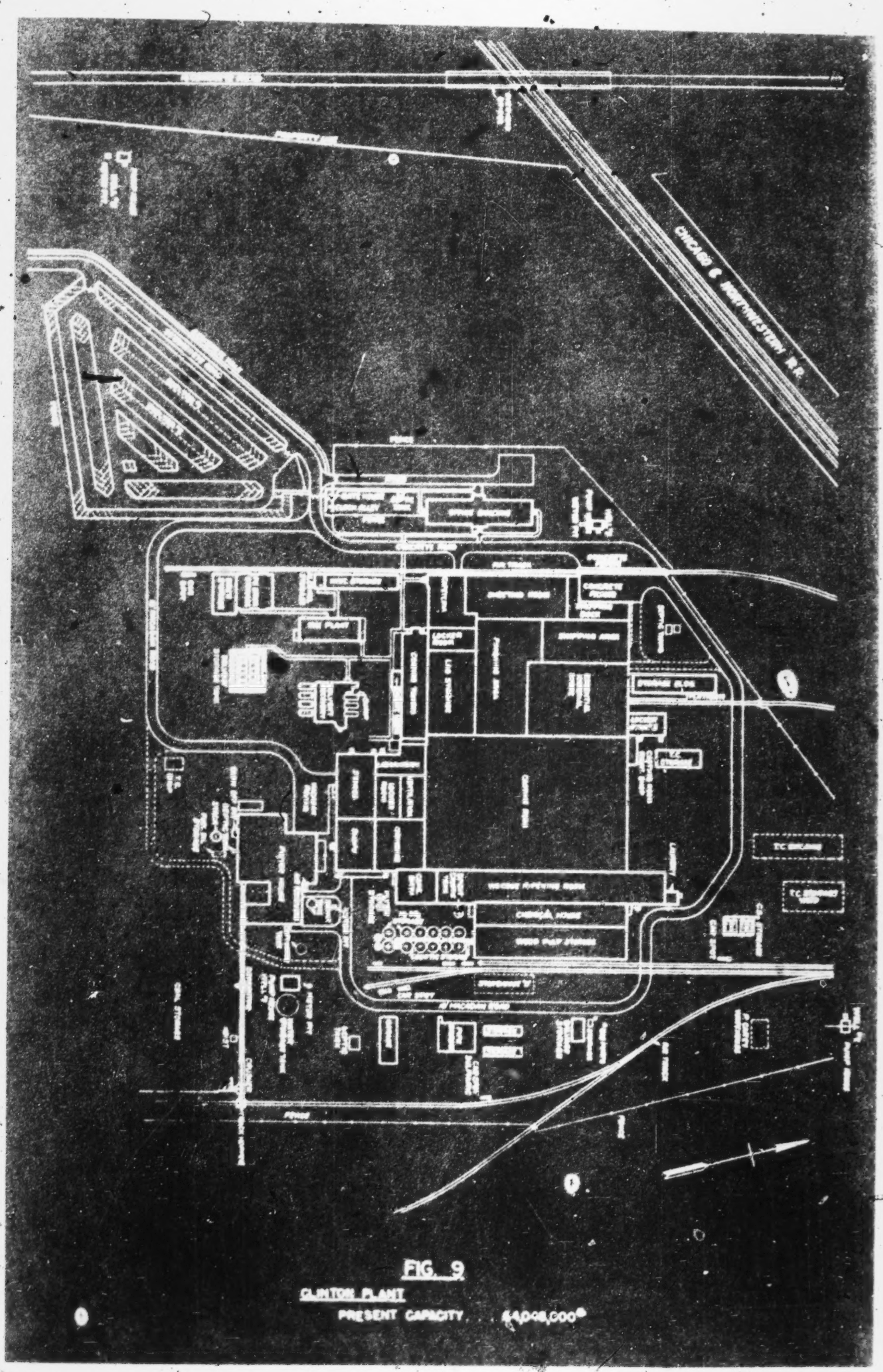


FIG. 9

CLINTON PLANT

PRESENT CAPACITY . . 44,000,000#

TABLE C-III

Clinton Permanent Investment Summary

	At Completion of Currently Auth. Projects		Expansion New Money		Investment after Expansion	
	M of $	$/Ann.Lb.	M of $	$/Ann.Lb.	M of $	$/Ann.Lb.
Chem. Bldg.	1,816	0.029	928	0.019	2,710	0.024
Visc. Ripen. Room	521	0.008	1,065	0.021	1,337	0.012
Cast. & Coag. Bath	5,334	0.083	5,650	0.114	10,768	0.095
Coat. & Solv. Recovery	2,271	0.035	1,267	0.026	3,539	0.031
Finish & Ship.	991	0.015	1,571	0.032	2,547	0.022
Essential Matl.Storage	449	0.007	775	0.016	1,174	0.010
Serv. Facil.	1,218	0.019	318	0.006	1,503	0.013
Power Direct	1,983	0.031	150	0.003	2,129	0.019
Power Allocated	438	0.007	1,070	0.022	1,508	0.013
Other Allocated	884	0.014	-	-	885	0.008
Total	15,905	0.248	12,793	0.259	28,100	0.247

A write-off of $332,000 and dismantling and protection to operations amounting to $271,000 are reflected in these figures.

New money at Clinton is approximately $0.26 per annual pound; considerably less than at any other plant. Permanent plant investment per annual pound remains substantially unchanged.

Because Clinton is now a new and modern plant, the effect of expansion on manufacturing cost, using the newest techniques that we can visualize, is relatively small. Table C-IV breaks down the estimated manufacturing cost before and after expansion and shows that the improvement in cost position expected is less than $0.01 per pound.

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TABLE C-IV

Clinton Estimated Manufacturing Cost Before and After Expansion

	Before Expansion $/Lb.	After Expansion $/Lb.	Difference $/Lb.
Total Materials	0.186	0.186	-
Total Lab. & Exp.	0.040	0.037	0.003
Direct Cost	0.226	0.223	0.003
Misc. Credits	0.001	0.001	-
Net Factory Cost	0.225	0.222	0.003
Power	0.012	0.012	-
All other Plant Burden	0.019	0.015	0.004
Total Plant Burden	0.031	0.027	0.004
Gross Factory Cost	0.256	0.249	0.007
Mfg. Expense	0.004	0.003	0.001
Depreciation	0.014	0.014	-
Other Gen. Burden	0.014	0.014	-
Total General Burden	0.032	0.031	0.001
Total Mfg. Cost	0.288	0.280	0.008

Materials are unchanged. Labor and expense are reduced $0.003 per pound in the Chemical Building and coating operation. Plant burden is reduced $0.004 per pound and general burden $0.001.

The new money position for Clinton is shown in Table C-V.

TABLE C-V

Return on New Money - Clinton Plant

	Proposed Expansion	
Added Annual Production (Millions of Pounds)	49.6	
New Money Expenditures	$(MM's)	$/Ann.Lb.
a) For Permanent Investment	12.5	0.25
b) For Depreciation and Operations	0.3	0.01
c) For Working Capital	4.5	0.09
Total New Money	17.3	0.35
Net Earnings after Expansion	10.4	
Present Net Earnings	5.4	
Net Earnings Applicable to New Money	5.0	
Net Return on Total New Money	28.8%	

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The net return on new money of 28.8% is substantially the same as that at Old Hickory. The effect of the expansion on return on investment is shown in Table C-VI.

TABLE C-VI

Summary of Investment, Cost and Return

	Present Operation		After Expansion	
Annual Production (Millions of Pounds)	64		113.6	
	$(MM's)	$/Lb.	$(MM's)	$/Lb.
Permanent Investment	15.9	0.25	27.7	0.25
Working Capital	6.0	0.09	10.5	0.09
Total Investment	21.9	0.34	38.2	0.34
Sales (100% of Capacity)	30.2	0.47	53.7	0.47
Cost of Sales	19.9	0.31	33.9	0.30
Operative Earnings	10.3	0.16	19.8	0.17
Net Earnings (7.7% AOE - 43% Tax)	5.5	0.09	10.4	0.09
Net Return on Total Investment	24.8%		27.0%	
Turnover	138.0%		139.0%	

Process II

The space immediately to the north of Clinton's present Casting Area is now open, giving us a location in which new casting machines may be installed. Comparison of this process with Process I is so close that a choice must be based on operating convenience and on estimates at the time expansion must come. If adopted, this process will demand a rearrangement of the expanded plant layout forecast by this report, because this layout uses the area in question for dispersion coating and lag storage.

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Process Elements to be Developed

The following processes must be developed in order to expand Clinton according to these plans.

1. Continuous steeping at a rate of 25 pounds of dry pulp per minute.

2. Alkali cellulose aging in dense form (1.8 times density of normally shredded alkali cellulose).

3. Continuous xanthation and mixing.

4. Continuous flow Viscose Ripening Room.

5. Double-sheet casting at 90 ypm.

6. Dispersion coating at 220 ypm.

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ORDER OF EXPANSION

The expansion order discussed herein is based on the relative gains in investment and cost predicted for each plant. They reflect as much information bearing on this subject as we can see at this time and are recorded in order to preserve the viewpoint for consideration along with other factors that will be apparent only at the time of expansion. In addition, it points out a possible progressive improvement in the Division's return position from which foreseeable circumstances will not make us deviate to any great extent.

Tables II, III, and IV contain a boiled-down summary comparing the financial effect of expansion at each of the plants, assuming that today's conditions will persist and that the necessary technical advances will be in hand.

TABLE II

Cost of Sales Before and After Expansion by Plants

	Yerkes	Old Hickory	Spruance	Clinton
Present Cost of Sales $/Lb.	0.419	0.344	0.338	0.311
Cost of Sales after Expansion $/Lb.	0.347	0.301	0.310	0.298
Difference $/Lb.	0.072	0.043	0.028	0.013

The comparative return on fixed investment plus working capital before and after expansion is:

TABLE III

Return on Investment Before and After Expansion by Plants

	Yerkes	Old Hickory	Spruance	Clinton
Return after Expansion	22%	27%	24%	27%
Present Return	11%	21%	20%	25%
Difference	11%	6%	4%	2%

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The return on new money is:

TABLE IV

Return on New Money by Plants

Yerkes	Old Hickory	Clinton	Spruance
31%	29%	29%	26%

By all standards of comparison, Yerkes is the first and Old Hickory the second plant to be expanded. Clinton is a close but better choice than Spruance for third position on the basis of return on new money. However, improvements in cost and return, which have a greater bearing on the Division's competitive position in a falling price market, favor Spruance, and we have chosen to show the progressive financial position of the Division with expansions in the order: (1) Yerkes, (2) Old Hickory, (3) Spruance, and (4) Clinton.

TABLE V

Progressive Production and Financial Position

	Production Increment MM of Lbs.	Total Capacity MM of Lbs.	Investment MM of $	Cost of Sales $/Lb.	Net Return %
Present Capacity	-	195	69.6	0.338	20.2
+ Yerkes Expansion	16	211	74.7	0.328	21.9
+ Old Hickory "	42	253	88.7	0.319	23.8
+ Spruance "	41.5	294.5	103.6	0.311	24.7
+ Clinton "	49.5	344	120.3	0.308	25.4

If we have to expand before all of the assumed techniques are in hand, Spruance will probably be expanded early and Process II will be used rather than Process I. Our final position will then differ from that shown above as follows:

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TABLE VI

Final Position Using Process II at Spruance

	Total Capacity MM of Lbs.	Investment MM of $	Cost of Sales $/Lb.	Net Return %
Final Position	344	120.9	0.310	24.9

The expansions at all of the plants can conveniently be split into smaller steps than are calculated in this report and, although the return on these smaller increments may not be the same as that shown, the indicated final result can be arrived at stepwise without serious waste. In many cases the most economical way of making a small expansion will not be the best way to arrive at the soundest final plant arrangement and process. If the plans contained in this report or others like them are to become the basis for the final pattern of our expanded plants, we must, therefore, exercise care not to take steps which will block the final plant design or make it necessary to back-track in order to reach it.

If cellophane capacity is to be expanded in accordance with plans outlined here, research programs must be completed to attain the following objectives:

1. Increased capacity of continuous steeping units.

2. Increased density of alkali cellulose during the aging step.

3. Continuous xanthation and mixing of viscose in plant-scale equipment.

4. Viscose production by the reduced shredding process, using Brown pulp.

5. Continuous ripening of cellophane viscose on a plant-scale.

6. Double-sheet casting at 90 ypm, with quality and efficiency levels as high as we now obtain with single-sheet.

7. Dispersion-coating at 220 ypm. and demonstration of quality levels of dispersion-coated film that will permit its wide acceptance by our customers.

Each of these research developments is a complete unit in itself; each will be discussed separately.

Increased Capacity of Continuous Steeping Units

Continuous slurry steeping equipment of the type planned for this expansion was developed at the Yerkes Staple Plant for a capacity of 13 pounds per minute of dry pulp. This capacity has been increased stepwise to 25 pounds per minute and, following some well-defined leads, is expected to reach 35 pounds per minute eventually. The Old Hickory Cellophane Plant using the same type of slurry steeping equipment has obtained as high as 19 pounds of dry pulp per minute. The problem we now face is that of increasing the throughput of these units. The pounds per minute required at each of the plants is: Yerkes 27, Old Hickory 30, Spruance 29, and Clinton 25. This program can best be worked out at Old Hickory because it has full size

continuous steeping machines. The Plant Technical Group there has started work on the problem and should finish it this year.

There is space at all plants for additional continuous steeping units if the assumed output is not attained. The additional new money required in the event that 25 pounds per minute (the production now realized at Yerkes) proves to be the ceiling for these units is $370,000 at all plants or $0.0025 per annual pound of expanded production.

Dense Alkali Cellulose Aging

The alkali cellulose ripening floor of the Chemical Building tends to be a bottleneck in the process and this problem will become acute as expansion progresses. It is necessary for the full expansion discussed here to achieve a density 1.8 times that of normally shredded alkali cellulose in order to process the amount of viscose required and not increase the size of tne alkali cellulose floor. A partial solution of this problem is necessary before any major expansion can start at any of the plants except Spruance.

A preliminary trial at Old Hickory, using continuously steeped pulp, achieved an aging density ratio of 1.6 by deferring shredding until after the alkali cellulose was aged; but the resulting viscose did not filter well. In this experiment dense aging was followed by conventional baratte xanthation; a combination not encountered in any plant after the expansion forecast by this report. The final solution of this problem requires a Chemical Building in which all of the elements of the continuous process are combined. We will have such facilities at Spruance by about June of this year.

This problem is critical and a program to solve it should be set up as soon as facilities are ready at Spruance. If densities 1.8 times that of shredded alkali cellulose are not achieved we will first try to use a part of the second floor of the Chemical Building, vacated of barattes by the continuous process, for aging. This will be inconvenient but less costly than adding building space at the third floor level.

Plant Scale Continuous Xanthation and Mixing

The continuous xanthation and mixing process developed by the Cellophane Research Section has been operated on a Semi-Works scale. Average filtration values of viscose made with the Semi-Works unit were slightly better than viscose made from the same alkali cellulose by conventional baratte methods. The problem with this process is the development of commercial-sized units to do the same job as has been done on the Semi-Works machine and to extend the use of this type equipment to continuously steeped pulp aged in dense form.

A continuous xanthator and mixer, scaled up at a ratio of 80:1 from the Semi-Works unit is being installed at Spruance and is expected to be complete in June. The machines on which these expansion plans are based represent a further scale-up of about 4:1. Completion of the design of these larger units following proving of the intermediate size cannot be expected before early 1952. We can then build one of the large continuous xanthators, or if the results of tests warrant it, we can install enough of them for a plant expansion.

Batch Process for Greater Viscose Production

The former three developments are all concerned with the continuous Chemical Building process and are of

interest to all plants. This development is of interest primarily to Spruance for immediate moves made prior to the time that continuous Chemical Building processes are ready.

The initial suggestion for this process came from Viscose Rayon Research. Its development for cellophane viscose has been studied by Cellophane Research and the Spruance Plant. The problem now is that of confirming previously successful experimental results and working out remaining details.

The process is handicapped by requiring the same steeping capacity and the same mixing capacity as the conventional batch process which limits it to Chemical Buildings much larger than are required for the continuous process at an equivalent capacity. Its advantage resides in its advanced state of development and its use of existing equipment which will permit its use in a plant within about one year.

The process is selective with respect to pulps and is therefore limited to those plants that can economically use certain ones. Brown pulp has been successfully tried in this process on a pilot baratte-charge scale. Weyerhaeuser and Phanecell pulps have shown encouraging results in the laboratory but have not been proved in the Plant. Brown pulp is of most immediate interest at Spruance.

Research on this process is in progress at Spruance.

Continuous Viscose Ripening

A continuous Viscose Ripening Room introduces three departures from the conventional process: continuous flow of viscose through transfer tanks; continuous deaeration; and constant rate-variable pressure filtration.

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Continuous deaeration is a going process in rayon plants. The complete process has been successfully tried in the Viscose Rayon Research Semi-Works.

Before this process can be used for a plant expansion it must be proved with cellophane viscose on a plant-scale. Such a test is scheduled in the experimental side of the Spruance V.R.R. during the last quarter of 1950.

Expansion plans at Spruance, Clinton and Old Hickory will use all elements of the process. Yerkes expansion needs only the continuous deaeration step. The process is expected to be ready for plant adoption by about the middle of 1951.

Double-Sheet Casting

We will spend approximately 40% of the permanent investment new money for this expansion in the Casting Area. The plans for this area, now based on double sheeting existing machines, will therefore bear scrutiny to make sure that they are the best and most economical that we can devise.

The first problem in paving the way to Casting Area expansion is that of fully exploring the double-sheet casting technique as to limiting speed, machine efficiency and operating convenience. Then the economics of this technique can be compared with building new single or double-sheet machines. At the casting speeds assumed in this survey, 90 ypm for double-sheet, 111 ypm for single, the new money investment per annual pound of increased production is about the same for converting as it is for building new single-sheet machines. The choice at some plants will be based on space relationships, for room in which to locate new casting machines is not available. At other plants, notably Old Hickory and Clinton, the choice will depend on economics and must be made on fully developed data.

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The double-sheet research program is just now getting under way with the approval of a project to convert an Old Hickory Plant I casting machine to produce two sheets of film. About 13 months will be needed to design and convert this machine, and, allowing another 6 to 12 months for experimental work, expansion plans based on double-sheet casting may be started about early 1952.

Dispersion Coating

Dispersion coating is a development of the Cellophane Research Section where it has been operated on a pilot plant scale for about a year. An operating speed of 100 ypm has been realized on the experimental machine; the longest continuous run at this speed was 12 hours.

Before dispersion coating can be used for major expansions two problems must be solved. They are: (1) development of equipment and techniques for efficient 24-hour a day operation at 220 ypm speed; and (2) determination of the size of the market for the product.

The dispersion coating technique offers both quality and cost advantages over nitrocellulose coatings. Dispersion-coated film has been established by laboratory tests to be superior to nitrocellulose film in permanence of moisture-proofness. Although field test data at hand are as yet inadequate, what information we do have demonstrates that it renders better service after printing or in uses that bring it in contact with greasy foodstuffs.

The investment is 50% to 60% of that required for an equivalent capacity in lacquer coating. Moreover, manufacturing cost is significantly reduced. Costs and returns used in this report credit dispersion coating with an essential material saving of $0.003 per pound of film over the lacquer

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coating process. A further reduction in material cost of $0.012 per pound of film is expected later because the Dow Chemical Company forecast a reduced price on vinylidene chloride purchased in the amounts we will need when this is a going process. This, when realized, will reduce the manufacturing cost estimated here by about $2,000,000 per year and returns will be correspondingly improved.

The operating techniques at speeds up to 100 ypm will be developed first in the Cellophane Semi-Works on a new pilot-scale coater to be ready for operation July 1, of this year. They will be extended to 220 ypm operation on a proportionally scaled-up machine to be installed at Old Hickory and scheduled for completion by the end of 1951. Trade acceptance tests will be carried out on an adequate scale starting about August 1, with production made on the Semi-Works machine. Markets for the product should be fully defined before the end of 1951 when the process is expected to be ready.

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SUMMARY

The times at which the undeveloped processes may be ready for incorporation in expansion plans, optimistically estimated in the preceding sections of this report, are summarized in Table VII. These times are none too early to meet expected expansion needs. Research time and money commensurate with the importance of expansion should be committed now to the solution of the problems involved.

TABLE VII

Timing of Developments Needed for Expansion

Process or Equipment	Estimated Ready Date
Continuous Steeping	January, 1951
Dense Alkali Cellulose Aging	June, 1952
Continuous Xanthation and Mixing	January, 1952
Reduced Shredding Process	January, 1951
Continuous Viscose Ripening	June, 1951
Double-Sheet Casting	March, 1952
Dispersion Coating	January, 1952

Prepared by: D. H. Edwards

W. W. Hess

Submitted by: G. M. Karns

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A P P E N D I X

ASSUMPTIONS APPLYING TO CELLOPHANE FILM

Purchased materials and sales of cellophane at current price levels.

Labor rates at current levels at all plants.

Construction index at 506 du Pont adjusted basis for all plant additions including power.

Depreciation at the following per cents of investment:

Direct Moistureproof -	Building & A&E		7%
General Utilities			6%
All other -	Building, 2.5%	A&E	6%

Power and all utilities at current per-unit rates.

Investment for additional power required for expansion must be included in new money. Excess power house capacity available at Old Hickory is disregarded because of the uncertainty of Rayon Division plans.

Facilities must be provided to insure that stream pollution will not be increased either by the additional capacity installed or by new processes introduced in the expansion.

Plant capacities are based on the following factors:

Before Expansion	After Expansion
Chemical Building	
Batch process assumes current cycles and throughput at each plant.	Batch process - same as before expansion. Continuous process assumes the following rates: Continuous steeping units 30 pounds dry pulp per minute. Density

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Before Expansion	After Expansion
Chemical Building - Cont'd	
	ratio of continuously steeped alkali cellulose to that of shredded alkali cellulose - 1.8, continuous xanthation 480 pounds of viscose per minute. (18" depth of blanket on xanthation belt.)
Casting Area	
355 casting machine days/ year: 93.75% casting machine efficiency: 111 ypm casting speed for Method III casting: current casting speeds on old machines which have a limited speed or for special production types.	355 casting machine days/ year: 93.75% casting machine efficiency: 111 ypm casting speed for Method III single-sheet, 90 ypm for double-sheet casting: current casting speeds for special production types.
Coating Area	
220 ypm speed for jet towers, current speeds for non-jet types; current machine and materials efficiency for all towers; 1.5% width shrinkage in coating.	220 ypm for jet type towers; 220 ypm for dispersion coaters; current speeds for non-jet towers; current machine and materials efficiency for solvent coating; same machine and materials efficiency for dispersion coating as solvent coating; 1.5% width shrinkage for solvent coating; 5% width shrinkage for dispersion coating.

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Before Expansion	After Expansion
Slitting	
Current slitting machine speeds and efficiencies - 4% slitting waste.	Current slitting machine speeds and efficiencies - 4% slitting waste.

Plant capacities before expansion do not correspond exactly to project figures. They have been adjusted slightly to make machine efficiencies, casting machine days per year, and slitting waste uniform among the four plants.

The earnings tabulated are not real earnings in any one year. They are theoretical earnings based on operating at capacity (with allowance for production and maintenance delays). To validate the assumption of capacity operation, storage facilities equivalent to 21 days' production (finished and semi-finished) are provided at each plant.

ASSUMPTIONS APPLYING TO COMPETITIVE NON-CELLULOSE FILMS

Production of film in a 50-million pound plant using the melt-extrusion process.

Casting capacity based on the following factors: 650 pounds per hour extruder capacity, 365 extruder days per year, 0.95 machine efficiency, 0.92 over-all waste factor.

Slitting capacity based on 333 ypm slitting speed, slitting waste - 5%.

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Coating

Basic Design Data - Cellophane Plant Dispersion Coating Facilities - H. F. Hoerig - Original Issue of 9/23/49 and two supplements of 9/26/49 and 12/9/49. Cellophane Research File, Yerkes, CC-2-D.

CR-48-38 - L. L. Lewis and B. C. Carrick - Exploratory Studies on Dispersion Coating.

CR-48-42 - D. R. McGregor - Vinylidene Chloride Copolymer Dispersion Coating of Cellophane -#11 - Semi-Works Coating Application Equipment

CR-49-32 - D. R. McGregor - Vinylidene Chloride Copolymer Dispersion Coating of Cellophane -#15 - Status of Semi-Works Equipment

CR-49-36 - T. D. Mecca - Evaluation of Polymer Dispersion-Coated Cellophane Film

CR-50-16 - L. L. Lewis - Vinylidene Chloride Dispersion-Coated Cellophane

Competitive Non-Cellulose Films

CR-49-10 - R. N. Clark - S Polymer Films

CR-49-22 - R. N. Clark - Thin Films Literature Search

DR-49-10 - E. C. Page, - Economics of New Film Candidates

(All of the above reports on file in the Yerkes Technical Library.)

DHS:fms

CM-635 d

[illegible]

[illegible]

A Complete set of Scopes of
Work on Each Plant is on File
with J. F. McCune and [illegible]

A Complete set of Estimates
for Each Plant is on File
with J. F. McCune.

(Submitted with Report on
Survey of Cellophane Future
Capacity, Economics and
Competition, Issued 4/28/50)

CM-625

GOVT EXHIBIT NO. 591
Civil Action 1215

(69)

CC: Mr. H. J. White
Mr. W. L. Richards

CONFIDENTIAL

May 27, 1948

MR. BILLI SHACKELFORD
ASSISTANT MANAGER
RAYON DEPARTMENT

CELLOPHANE PRICES

The quantity discount on Cellophane sold to direct users was discontinued January 1, 1947. This discount ranged from a maximum of 10% to 0%. The average discount on all direct sales was approximately 3g% off list. Several large customers, such as American Tobacco, purchased sufficient quantity to enjoy the 10% discount. At the same time, the discount to converters was reduced from 10% to 7½%.

In May 1947, 65% of the various types of film manufactured were increased in thickness or unit weight referring to the same gauge and thickness that was in effect prewar. This increase in thickness reduced area factor so that the users purchasing this film in effect received a price increase of about 7½%.

On October 1, 1947, the present price schedules were made effective. This change increased our average selling price approximately 7%. The following brief table shows the present prices and prices effective prior to October 1st on some of our major types.

	Old Price	Present Prices Eff. 10/1/47	% Inc.
300 PT	.33	.42	27.3
300 PC	.45	.54	20.0
450 PT	.38	.43	13.2
600 PT	.45	.48	6.7
300 MST	.41	.44	7.3
450 MST	.46	.45	- 2.2
600 MST	.54	.50	- 7.4

The operative return from Cellophane sales to date this year is 24.3%. On completion of projects authorized for increased tonnage we will have an annual poundage of approximately 187,000,000 and should be producing at this rate about October of this year.

7538

8379

GOV'T EXHIBIT NO. 591
Civil Action 1216

(69)

A forecast of operative return on $65,000,000 total investment to produce approximately 187,000,000 annual pounds, with the increase in salary, wages and materials that were used in our 52 financial forecast (chief changes over present -- 7 increase in salaries and wages, $5.00 per ton increase in pulp, a 50¢ per ton increase in coal and other minor upward revisions in materials), is about 31% at capacity operation with present selling prices.

Our operative return over the past 10 years and to date this year is as follows:

	% Operative Return	% Net Return
1937	25.2	19.4
1938	27.5	21.5
1939	36.8	28.7
1940	36.1	20.4
1941	39.6	15.2
1942	26.6	8.4
1943	33.6	9.0
1944	23.8	9.7
1945	34.3	13.9
1946	29.5	16.7
1947	19.1	11.2
1948 to date	24.3	13.4
1949 Forecast	31.0	20.7

If an operative return of 31% is considered inadequate then an upward revision in prices will be necessary to improve the return.

The following points have a direct bearing on the matter of prices and should be given very careful consideration.

(1) Can we sell the capacity output of our plants? In our discussions with the Director and Assistant Director of Sales we used an increase of 7.5% in the present average selling price, and reduced the converter discount from 7½ to 5%. This would yield approximately 40% operative return at capacity operation (same costs used when arriving at 31% for 1949). The District Managers are divided in their opinion as to whether all film can be moved for the balance of 1948. Their chief concern is due to rate of increase from May sales of approximately 13.4 million pounds and in the course of from 4 - 6 months we will be producing at a monthly rate of approximately 15.6 million pounds. However, the majority of the District Managers, the Director and Assistant Director of Sales are of the opinion, barring a recession, the tonnage can be sold. I personally am of the opinion this can be done.

2. What effect, if any, will a price increase have on our case when it is heard before the Federal Judge? I have not covered this with our Legal Department but in view of the position they took last July and August, prior to the October increase, I am inclined to think they should be brought in for a discussion on this matter.

3. The du Pont Company may get some undesirable publicity from the press. A price increase on Cellophane could be looked upon as added fuel to the present recent spurt in the inflationary spiral and add to the present pressure for an increase in wages. This question is currently a live one at several of our Cellophane plants. Probably it would be in order to discuss this with Mr. Brayman.

If a price increase is in order after the above points have been given proper consideration, we would reduce the converter discount from 7½% to 5% off list, and increase average selling prices approximately 7½%. These changes would increase the operative return from approximately 30% to approximately 40%. The following table shows the price increase on some of the major types of film.

	Present Price	Proposed	% Increase
300 PT	.42	.47	11.9
300 PO	.54	.57	5.5
450 PT	.43	.47	9.3
600 PT	.48	.50	4.1
600 PUT	.48	.48	-
300 MT	.44	.47	7.0
300 MST	.44	.47	7.0
300 LST	.44	.47	7.0
300 MSDT	.44	.50	13.6
300 MAT	.50	.55	10.0
450 MST	.45	.47	4.4
450 MSAT-84	.60	.64	6.6
600 MST	.50	.50	-

To place a revised price schedule in effect by August we should be advised by not later than June 10th.

R. KUNSMAN
DIVISION MANAGER

AK:IM

CONFIDENTIAL TO: (Original this letter not sent out-Talked with Mr. Kinsman on phone.D.F.C.)

Mr Kinsman
Mr. Bean
Mr. Haley

E. I. DU PONT DE NEMOURS & COMPANY
WILMINGTON, DELAWARE

FILM DEPARTMENT

For your information-Advised Kinsman by phone we proposed no increase at this time. This letter not sent.

Please review in ample time to take action as of October 1, 1950, if such action appears desirable.

D. F. Carpenter
7/7/50

July 7, 1950

29.

GX592

Mr. J. Warren Kinsman
Vice President
Olin Du Pont Building

After reviewing our situation further, we do not propose to recommend an increase in Selling Price of Cellophane at this time.

We propose, however, to review the situation later in the year for possible action October 1st, or later.

The more important reasons for our decision not to increase at the present time are as follows:

(1) Preliminary calculations on the No. 3 Forecast indicating Operative Return on Investment at present prices, in excess of 40%.

(2) We have been forced to reduce our allocations of cellophane to our customers by 10% for the month of August. We are apprehensive that increase in price to take effect immediately thereafter would cause serious resentment and disturb our relationships with our customers, who in spite of serious hardships due to shortage of cellophane, appear at present to be taking a very understanding attitude.

For your information, an average increase of $.02 per pound on cellophane with a simultaneous adjustment in certain converter discounts, results in an increase in Operative Earnings for the forecast period of approximately $3,000,000. and would bring the Operative Return on Investment to something over 45%.

Actual Operative Return for the first five months of the calendar year on an annual basis was 45.8%

Increases in wages, raw material prices and pension costs amount to approximately $.01 per pound.

CM-6316

Mr. Kirsman July 7, 1950

-2-

If an increase were decided upon at the present time, it would be impossible to make it effective prior to September 1st.

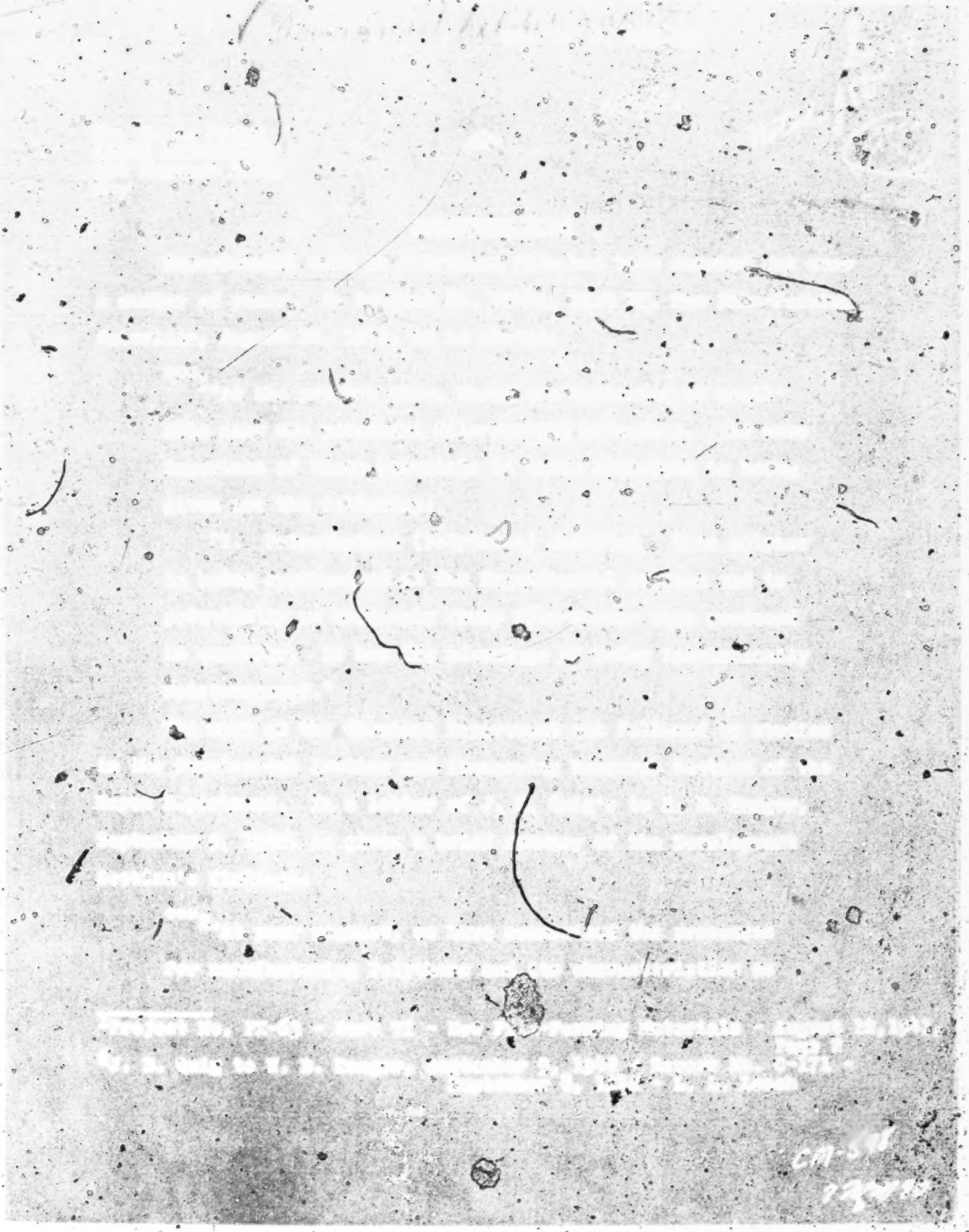
In the event you should desire additional information on this subject, I should be very happy to furnish it.

FILM DEPARTMENT

GENERAL MANAGER

D.F.Carpenter:SH

CM-646



a film-former. This short survey indicates that Polythene film is outstanding in the following:

"1. It is inherently moisture-proof.
2. The area factor is 50% greater than that of Cellophane.
3. Its chemical resistivity is unusual. This suggests possibilities in the container-liner and the general food-wrapping fields. It has shown up unusually well when exposed to various acids, organic solvents, foodstuffs, fats, oils, and juices.
4. Its dielectric properties are excellent.
5. It can be heat sealed to form a true weld.
6. Its cost is relatively low.

"Less favorable properties than for Cellophane are shown in tenacity, body or stiffness, usable temperature range, and susceptibility to marring. Due to its flexibility at low and at room temperatures, machine wrapping will undoubtedly present difficulties on present machines, and it is recommended that this matter be given careful consideration in further research."

The Pioneering Research Section concluded in a letter to G. W. Filson, July 26, 1944, the following with respect to Polythene and other films:

"3. The purpose of this project was to examine any and all new and interesting film-forming polymers from either within or outside the du Pont Company as potential film-forming materials for new types of Cellophane. A very wide range of materials came under investigation, many of them

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[2] W. H. Church to G. W. Filson, Closing Report - Project PX-63 - New Film-Forming Materials - 1944, July 26, 1944

CM-591

using the products of Chemical Department researches. In other cases, some of these polymers originated in other departments of the Company, as for instance, Plastics or Electrochemicals. The work carried out by Pioneering Research was preliminary to more extended development work by the Cellophane Research Section. It was decided during the instant year to transfer this type of research to the Cellophane Research Section where it is now active.

"Out of these studies, a group of new films has emerged, including the following more interesting varieties:

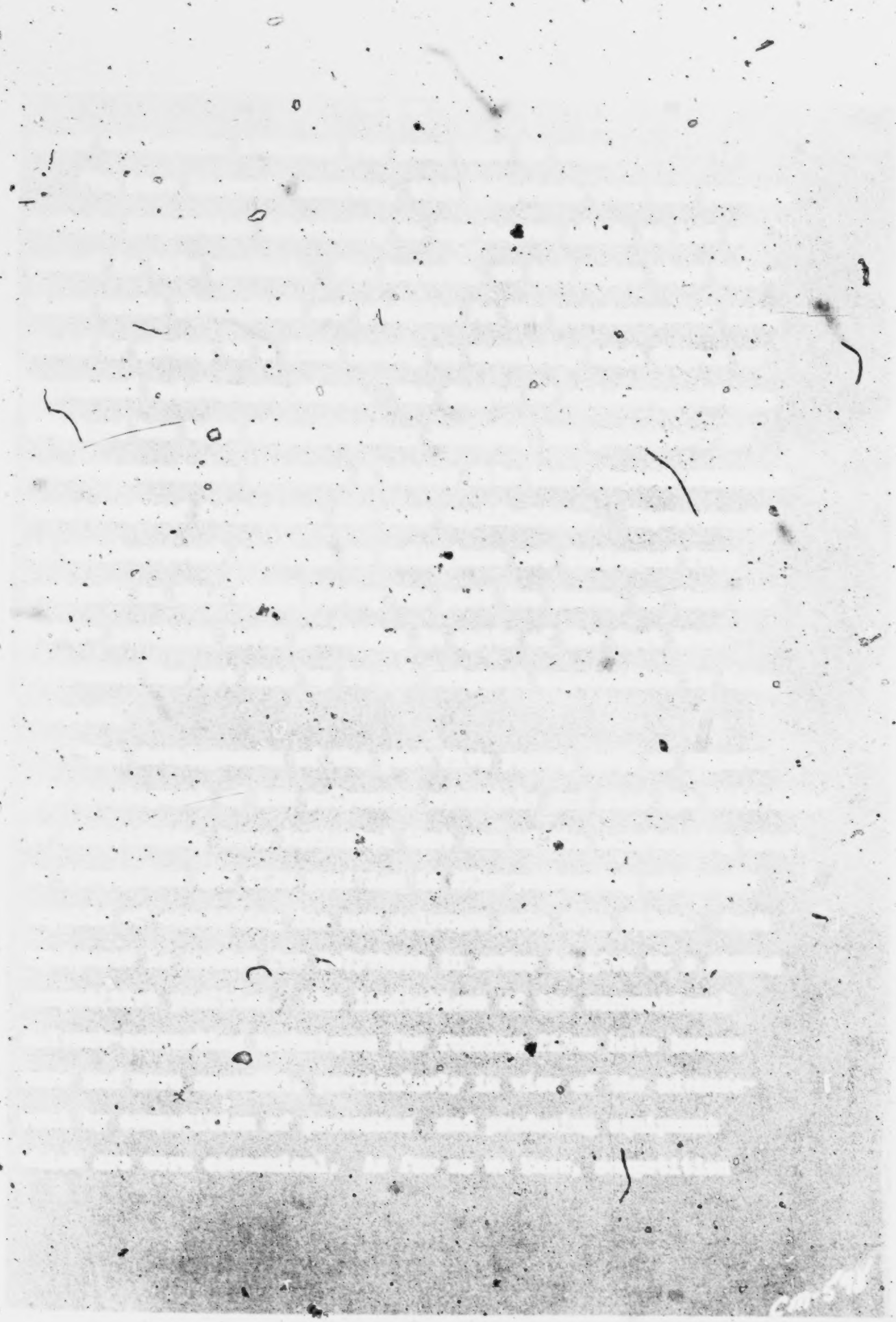
"Polythene
Vinyl chloride diethyl fumarate (Electro-Chemical's DF Resin)
Butacite, both plain and moistureproof
Polyvinyl alcohol
"T" film (a polyvinyl alcohol about 50% reacted with butyraldehyde)
Polyhydroxy alkane (PHA from Plastics)

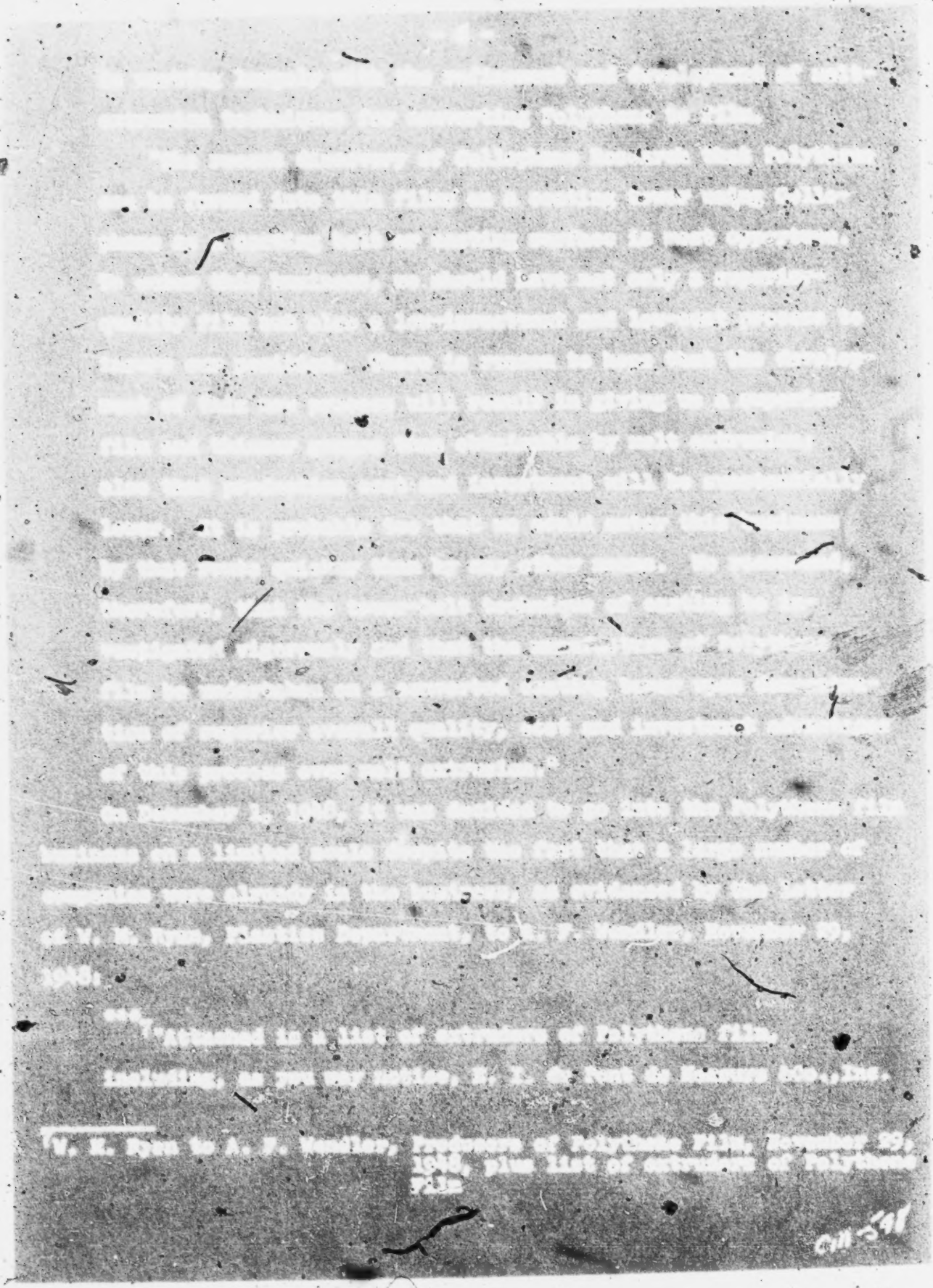
"All of these materials represent a variety of properties which would comprehend a variety of new uses for Cellophane-like materials.

"Since work of this character will be carried on in the future by the Cellophane Research Section, the Pioneering Group is discontinuing this project and, in the future, will direct its efforts in the Cellophane field elsewhere."

In the next several years, considerable market research work was done. In the packaging field, the results are contained in R. C.

CM-548





[illegible]

On December 1, 1949, it was decided to go into the Polythene film business on a limited scale despite the fact that a large number of complaints were already in the hopper, as evidenced by the letter of W. H. Ryan, Plastics Department, to A. F. Wendler, November 29, 1948:

"Attached is a list of customers of Polythene film, including, as you may notice, E. I. du Pont de Nemours [illegible], Inc.

[illegible] W. H. Ryan to A. F. Wendler, Producers of Polythene Film, November 29, 1948, plus list of customers of Polythene film.

"If I can be of any further help to you, please let me know."

"PRODUCERS OF POLYESTER FILM

A.M.E. Products Co.
P. O. Box 717
Pittsburgh 30, Pa.

American Phenolic Corp.
1830 S. 54th St.
Chicago 50, Ill.

Carter Products Corp.
10225 Meech Ave.
Cleveland 5, Ohio

Cellulplastic Corp.
50 Avenue L
Newark, 5, N. J.

Dewey & Almy Chemical Co.
62 Whittemore Ave.
Cambridge 40, Mass.

E. I. du Pont de Nemours &Co., Inc.
Rayon Dept., Cellophane Div.
Buffalo, N. Y.
(Sales - Wilmington 98, Del.)

Extruders, Inc.
8509-15 Higuera St.
Culver City, Cal.

Fabricon Products, Inc.
Plastics Div.
1721 Pleasant Ave.
River Rouge 18, Mich.

H & H Industries
Mill & Race Sts.
Bath, Pa.

Mail Mfg. Corp.
175 Linden St.
Hackensack, N. J.

The Harwid Co.
229 Binney St.
Cambridge 42, Mass.

Hydrawlik Co.
131 E. 1st Ave.
Roselle, N. J.

*Irvington Varnish & Insulator Co.
6 Argyle Terrace
Irvington 11, N. J.

*National Plastics Products Co.
Odenton, Md.

*National Varnished Products Corp.
P. O. Box 64, Rahway, N.J.
(Plant - 211 Randolph Avenue,
Woodbridge, N. J.)

Plastics Process Co.
662 N. Robertson Blvd.
Los Angeles, Cal.

Plax Corp.
76 Talcott Rd., W. Hartford,
P. O. Box 1019 Conn.
Hartford, Conn.

**Reynolds Metals Co.
Plastics Div. - 3840 Georgia St.
Gary, Ind.
(Sales - 19 E. 47th St.
New York, N. Y.)

Shoreline Industries
Clinton 5, Conn.

Surprenant Mfg. Co.
199 Washington St. Boston, Mass.
(Plant - 172 Sterling St.
Clinton, Mass.)

Visking Corp.
6733 W. 65th St.
Chicago 38, Ill."

*Currently making only tape
**Produces cast film only

11-29-48

CM-548

In the Spring of 1949, it was decided to go into the commercial production of Polythene film. The reasons for this decision are summarized in D. D. Lanning's memorandum of April 25, 1949:

"...[8] "1. Polythene is a worth-while film. It has many attractive properties for diverse uses. With the technical backing that Du Pont can and is giving it, we should attain and maintain a substantial superiority over competition.

"Polythene may be the answer to a cheap film. Ethylene is one of the cheapest raw materials that can be visualized. As the Ammonia Department gains production experience, it is not unreasonable to expect the price to come down markedly.

"We can expect improvements over the present film within a relatively short time. Methods of obtaining transparency are already known. The research people in the Ammonia Department believe that their present investigations will be at a point within a year wherein they will be able to control the polymerization cycle to give any degree of stiffness desired in the final film.

"2. Du Pont has a large stake in the Polythene enterprise. We enjoy a preferred patent position over C. & C. in the manufacture of the flake and the fact that C. & C. pays us a royalty should insure a cost advantage until the basic patents run out. Polythene represents the only immediate means for diversification of the du Pont film business.

---

[8] D. D. Lanning - to Messrs. A. E. Buchanan, G. P. Hoff - W. W. Heckert, A. Kunsman-J. E. Dean, W. L. Hyden - D. F. Holmes, A. F. Wendler, G. M. Kerns, Should du Pont Be In the Polythene Film Business, April 25, 1949.

CM-5M

"3. The thin plastic film industry has had phenomenal growth in the last five years. Our participation will enable us to gage this market and estimate the potential and properties required. In so doing, we will be building up economic information which will allow us to accurately determine our interest in this field.

"4. The fact that the investment is low, and that such investment as is necessary to get into business at the 5 MM pound level has already been spent, argues that we have little to lose by going forward as rapidly as possible.

"5. The requirement of a 25% return on working capital does not seem to apply to an industry of the type visualized. This is under study by the Development Section with the objective of getting this general rule modified to fit the specific case. It is not apparent why we should need to earn a higher return on working capital than our competitor.

"6. It appears that there is a real possibility that a calendered or extruded film will be produced within a few years which can perform many of the functions of Cellophane and can be sold at a lower price. A stiffer, transparent Polythene could be in this category.

"If a film competitive with Cellophane is developed, we should be the developers. It is, therefore, important that we become active in this field if for no other reason than to protect the Cellophane investment.

"7. In C.A. and Cellophane Sales, we have a sales organization better able to market a new film than any other group in the country."

CM-3

Our position as of the first of January 1950 is that we have an installed capacity at the Parlin location for producing approximately 5,000,000 pounds a year. Our present plans are to sell this out-put as quickly as possible. This will enable us to actively appraise the market for Polythene and determine what our position should be in respect to this film.

D. D. Lanning, Assistant Manager,
ACETATE & POLYTHENE FILMS

DDL:jm

CM-598

Defendant's Exhibit No. 1

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(CONTINUED FROM PAGE 93)

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Gottschalk & Co., Reedsville, Pa.

PAPER BAKING CUPS
See Baking Cups.

PAPER PAN LINERS
Sherman Paper & Box Co., 41 Lincoln St., Boston, Mass.

PAPER WAXED AND PARAFFINE
See Waxed and Parafine Papers.

PEACHES
California Peach & Fig. Growers, Fresno, Cal.

PEELS
Kalfus, L., Co., 119 Ridge St., New York.
Schroeder, H. L., 3626 Carroll Ave., Chicago.

PIE CASES—SHIPPING
Baskus, Jr., & Sons' A., 1535 Lafayette Blvd., Detroit, Mich.
Miami Mfg. Co., Peru, Ind.

PIE FILLINGS
Bear-Stewart Co., 13-15 W. Austin Ave., Chicago, Ill.
Chapman & Smith Co., 1017 Washington Blvd., Chicago, Ill.
Hirsch Brothers Co., Inc., 500-502 North Wells St., Chicago, Ill.
International Co., The, Baltimore, Md.
Jaburg Bros., 10-16 Leonard St., New York.
Johnson Co., H. A., Boston, Mass.
Lowe Co., Inc., Joe, Bush Terminal Bldg. No. 8, Brooklyn, N. Y.
Merrell-Soule Sales Corp., Syracuse, N. Y.
Stein, Hall & Co., Inc., 61 Broadway, New York City.

PIE MACHINERY
Colborne Mfg. Co., Chicago, Ill.
Day Co., J. H., Cincinnati, Ohio.
Mills & Co., Thos., Inc., 1301 N. 8th St., Philadelphia, Pa.

PROOFERS
American Bakers Machinery Co., St. Louis, Mo.
Baker-Perkins Co., Inc., White Plains, N. Y.
Champion Machinery Co., Joliet, Ill.
Day Co., J. H., Cincinnati, Ohio.
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Jaburg Bros., 10-12 Leonard St., New York.
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Peerless Sanitary Equipment Co., Lafayette, Ind.
Read Machinery Co., York, Pa.
Roberts Portable Oven Co., 854 West North Ave., Chicago, Ill.
Thomson Machine Company, Belleville, N. J.
Union Machinery Co., Joliet, Ill.
Union Steel Products Co., Albion, Mich.
Wolff Millwrighting & Machine Co., Prod. Newark, N. J.

PYROMETERS
Bennett Oven Co., Battle Creek, Mich.
Hubbard Portable Oven Co., 1136 Belden Ave., Chicago, Ill.
Roberts Portable Oven Co., 854 West North Ave., Chicago, Ill.
Taylor Instrument Co., Rochester, N. Y.

RACKS (Bread, Pan, Etc.)
Champion Machinery Co., Joliet, Ill.
Day Co., J. H., Cincinnati, Ohio.
Jaburg Bros., 10-12 Leonard St., New York.
Jaburg-Miller Co., Inc., 137 Hudson St., New York.
Johnson Co., H. A., Boston, Mass.
Kalfus, L., Co., 119 Ridge St., New York.
Peerless Sanitary Equipment Co., Lafayette, Ind.
Roberts Portable Oven Co., 854 West North Ave., Chicago, Ill.
Schroeder, H. L., 3626 Carroll Ave., Chicago.
Union Steel Products Co., Ltd., Albion, Mich.

RAISINS
Sun Maid Raisin Growers Assn., Fresno, Calif.

ROLL AND BUN MACHINES
Baker-Perkins Co., Inc., White Plains, N. Y.
Dutchess Tool Co., Beacon, N. Y.

ROLL MOULDERS
Thomson Machine Co., Belleville, N. J.
Union Machinery Co., Joliet, Ill.

ROUNDING-UP MACHINES
Amer. Bakers Machinery Co., St. Louis, Mo.
Baker-Perkins Co., Inc., White Plains, N. Y.
Century Machine Co., Cincinnati, Ohio.
Champion Machinery Co., Joliet, Ill.
Day Co., J. H., Cincinnati, Ohio.
Dutchess Tool Co., Beacon, N. Y.
Jaburg Bros., 10-12 Leonard St., New York.
Petri & Jones Co., Boston, Mass.
Thomson Machine Co., Belleville, N. J.
Union Machinery Co., Joliet, Ill.

SACK CLEANERS
American Oven & Mach. Co., 111 W. Washington St., Chicago, Ill.
Champion Machinery Co., Joliet, Ill.
Wolff Millwrighting & Machine Co., Prod. Newark, N. J.

SALT
Diamond Crystal Salt Co., St. Clair, Mich.
Worcester Salt Co., 71 Murray St., New York.

SALES BOOKS
American Sales Book Co., Elmira, N. Y.

SALT RISING YEAST
H. A. Kohman, c/o Mellon Institute, University of Pittsburgh, Pittsburgh, Pa.

SCALES (Water, Flour and Loaf)
Baker-Perkins Co., Inc., White Plains, N. Y.
Champion Machinery Co., Joliet, Ill.
Day Co., J. H., Cincinnati, Pa.
Read Machinery Co., York, Pa.
Smith Scale Co., Columbus, Ohio.
Thomson Machine Co., Belleville, N. J.
Triumph Mfg. Co., Cincinnati, Ohio.
Wolff Millwriting & Machine Co., Prod. Newark, N. J.

SHIPPING BOXES
See Boxes.

SHOW CASES
Columbus Show Case Co., Columbus, Ohio.
Jaburg Bros., 10-12 Leonard St., New York.
Miami Mfg. Co., Peru, Ind.
Sherer-Gillett Co., 17th & Clark Sts., Chicago, Ill.

SHORTENING
Procter & Gamble Co., Cincinnati, Ohio.
Southern Cotton Oil Trading Co., 120 Broadway, New York.

SPECIALTIES
Bear-Stewart Co., 13-15 W. Austin Ave., Chicago.
Chapman & Smith, 1017 Washington Blvd., Chicago.
Henry Heide, New York, N. Y.
Hirsch Brothers Co., Inc., 500-502 North Wells St., Chicago, Ill.
International Co., The Baltimore, Md.
Jaburg Bros., 10-12 Leonard St., New York.
H. A. Johnson Co., 221 State St., Boston.
Lowe Co., Inc., Joe, Bush Terminal Bldg. No. 8, Brooklyn, N. Y.
Stein-Hall Mfg. Co., Chicago, Ill.

STEAM GENERATORS
Monarch Sales & Equip. Co., 766 Times Bldg., St. Louis, Mo.

STORAGE BATTERIES
Edison Storage Battery Co., Orange, N. J.
The Electric Storage Battery Co., Allegheny Ave. and 19th St., Philadelphia, Pa.
K. W. Battery Co., 1532 So. Michigan Ave., Chicago, Ill.

SUGAR—CORN
Corn Products Refining Co., New York.

SUPPLY HOUSE
Bear-Stewart Co., 13-15 W. Austin Ave., Chicago.
Chapman & Smith, 1017 Washington Blvd., Chicago.
Hirsch Brothers Co., Inc., 500-502 North Wells St., Chicago, Ill.
Jaburg Bros., 10-12 Leonard St., New York.
Jaburg Miller Co., 137 Hudson St., New York City.
H. A. Johnson Co., 221 State St., Boston.

TAPIOCA
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Petri & Jones Co., Inc., Boston, Mass.
Roberts Portable Oven Co., 854 W. North Ave., Chicago, Ill.
Schroeder, H. L., 3626 Carroll Ave., Chicago.
Triumph Mfg. Co., Cincinnati, Ohio.
Union Steel Products Co., Ltd., Albion, Mich.

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D. W. Cass Co., The, 1037 West 11th St., Cleveland, Ohio.
The Malone Oil Co., Wayne, Mich.

TRUCKS (Shop)
Baker-Perkins Co., Inc., White Plains, N. Y.
Champion Machinery Co., Joliet, Ill.
Jaburg-Miller Co., Inc., 137 Hudson St., New York.
Lockwood Mfg. Co., Cincinnati, Ohio.
Schroeder, H. L., 3626 Carroll Ave., Chicago.
Union Steel Products Co., Albion, Mich.

USED EQUIPMENT
Kalfus L., Co., 119 Ridge St., New York.

UTENSILS
Jaburg Bros., 10-12 Leonard St., New York.
Jaburg-Miller Co., Inc., 137 Hudson St., New York.
Janney, Steinmetz & Co., Morris Bldg., Philadelphia, Pa.
H. A. Johnson Co., 221 State St., Boston.
Katzinger Co., Edward, 1949 N. Cicero Ave., Chicago, Ill.
Kalfus, L., Co., 119 Ridge St., New York.
Lockwood Mfg. Co., Cincinnati, Ohio.
Mang Co., The August, Baltimore, Md.
Mills & Bro., Thos., Inc., 1301 N. 8th St., Philadelphia, Pa.
Peerless Sanitary Equipment Co., Lafayette, Ind.
Petri & Jones Co., Inc., Boston, Mass.
Roberts Portable Oven Co., 854 West North Ave., Chicago, Ill.
Schroeder, H. L., 3626 Carroll Ave., Chicago, Ill.
Union Steel Products Co., Albion, Mich.

WAGON PANELS
Pantasote Co., The, 11 Broadway, New York.

WASH FOUNTAINS
Bradley Washfountain Co., Milwaukee, Wis.

WAXED AND PARAFFINE PAPERS
Amer. Bread Wrapper Co., 351-363 E. Ohio St., Chicago, Ill.
Central Waxed Paper Co., Central Ave. and Taylor St., Chicago.
Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Newark Paraffine & Parchment Paper Co., 120 W. 42d St., New York.
Sanitary Paper Co., Kalamazoo, Mich.
Shawmut Waxed Paper Co., Holliston, Mass.
Standard Paper Spec. Co., Plainwell, Mich.

WIRE GOODS
Peerless Sanitary Equipment Co., Lafayette, Ind.
Union Steel Products Co., Ltd., Albion, Mich.

WOODENWARE
Jaburg Bros., 10-12 Leonard St., New York.
Kalfus, L., Co., 119 Ridge St., New York.
Schroeder, H. L., 3626 Carroll Ave., Chicago.

WRAPPING AND SEALING MACHINES
Amer. Bread Wrapper Co., 351-363 E. Ohio St., Chicago.
Haysen Mfg. Co., Sheboygan, Wis.
Jaburg Bros., 10-12 Leonard St., New York.
Thomson Machine Co., Belleville, N. J.
Union Machinery Co., Joliet, Ill.

YEAST
Fleischmann Co., all cities.
Liberty Yeast Co., 54 W. 45th St., New York, N. Y.
Red Star Yeast & Products Co., 79-83 Buffalo St., Milwaukee, Wis.

YEAST FOOD
International Co., The, Baltimore, Md.
Stein-Hall Mfg. Co., Chicago, Ill.
Ward Baking Co., New York.

MICH

Defendant's Exhibit No. 3

Our Ultra-Modern plant with our up-to-date methods, reduce to a minimum your waxed paper troubles and insure a uniform product at all times. Printed in bright colors and attractive designs CENTRAL wrappers BUILD sales.

Dependable Service Guaranteed

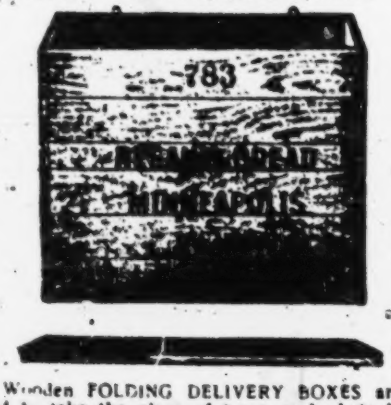
CENTRAL WAXED PAPER CO.
5659 W. Taylor St.
CHICAGO, ILL.

We are headquarters for CALIFORNIA FIG BREAD WRAPPERS which are carried in stock for immediate shipment. We also carry in stock the following wrappers in size 14 x 18 and 15 x 20

Raisin — Health — Federal — Bran
Real Loaf — Salt Rising — Graham
Family Loaf

Boost your sales on these brands by using our attractively printed stock wrappers

DELIVER YOUR BREAD IN
HUBBARD'S
Folding Delivery Boxes
THE SANITARY WAY



Our Wooden FOLDING DELIVERY BOXES are designed to take the place of trays or baskets in the delivery wagons or auto trucks. They are proving to be more sanitary, more convenient, and a vast improvement over the old method of delivery. Get our catalogue "Economy of Space."

Puffer-Hubbard Mfg. Co.
2607 East 26th Street
MINNEAPOLIS MINNESOTA

New Insurance Service for Bakers

After serving Master Bakers for fire and casualty insurance for twenty years we are now prepared to offer your industry a

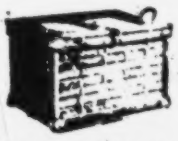
National Service for Vendor's Liability Protection

providing perfect defense against frauds, prompt adjustment of legitimate claims—and complete indemnity against judgments.

FOR DETAILS, WRITE:

BRUCE DODSON & CO.
28th & WYANDOTTE STS., KANSAS CITY, MO.

MIAMI



SHIPPING BOXES **SHOW CASES**

Address Dept. 10
MIAMI MANUFACTURING CO.
PERU, INDIANA

Defendant's Exhibit No. 4

NOW READY!

Siebel Institute of Technology announces the completion of its modern Combination Extension Course in Scientific Baking.

Twenty-Eight Complete Lessons

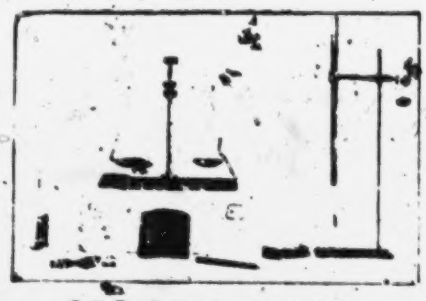
The Course comprises twenty-eight complete lessons covering the scientific phases of bread and cake baking. The following are some of the subjects taken up:

Mathematics	*Advertising*
Physics	*Pies*
Chemistry	*Puff paste*
Baking Materials	*Piping*
Baking Technic	*Icing*
Shop Records	*Tortes*
Baking Law	*Pastry*
	Decorating
	Refrigeration
	Accounting

The Course is complete from every angle and offers to the Baker an ideal chance to train himself at home—at low cost—without leaving his work.

Elaborate Laboratory Outfit Free!

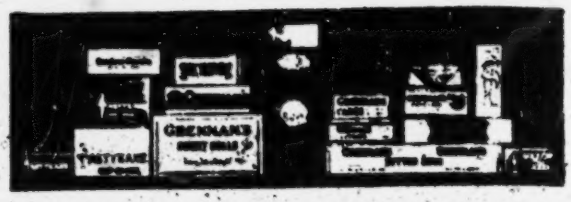
So that he can work out the many interesting tests called for by the lessons, the student is furnished FREE a laboratory outfit. The Outfit alone is worth $15.



Full Particulars for the Asking!

SIEBEL INSTITUTE OF TECHNOLOGY, N.C.A.
942 Montana Street, Chicago, Illinois
Please send me full particulars of the Siebel Home Study Course in Scientific Baking FREE.

Name .....
Address .....
Town .....
State .....
Position I Now Hold .....



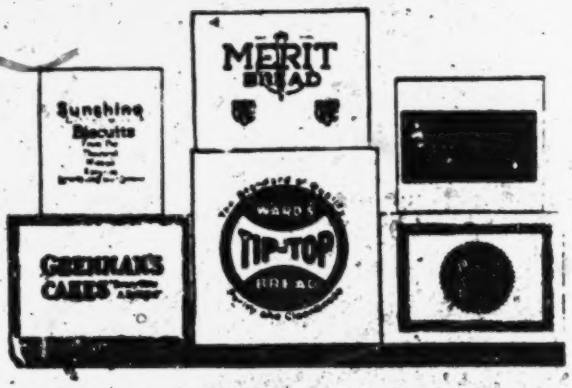
A Few of Our Folding Paper Boxes for Bakers

The Trade Marked Package identifies the goods and inspire confidence.

Carload shipments of Folding Paper Boxes for bakers are leaving our plant with surprising regularity.

The increased size and frequency of the orders indicate that attractive boxes stimulate sales of baked goods.

Boxes are produced from the raw material to the finished job in colors in our own plant.



Corrugated or Solid Fibre Bread Containers are Sales Boosters

They make a good appearance and, therefore, a good impression.

Because they seal up tight the bread is delivered oven fresh—free from contaminating odors, dust or moisture.

Your advertisement neatly reproduced in one or two colors on these fine looking containers helps to increase sales.

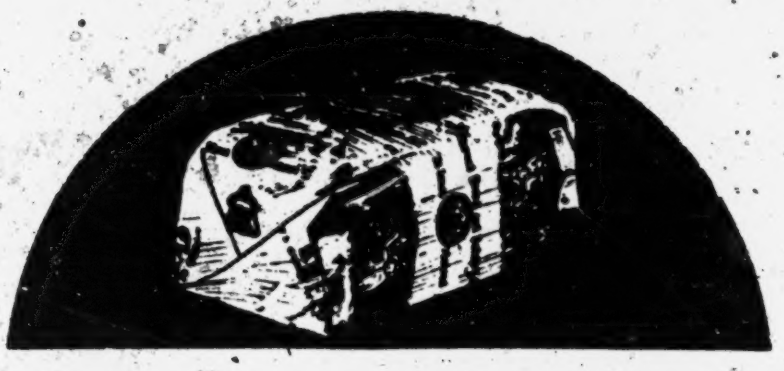
Quickly and easily packed with a definite number of loaves—they speed up your shipping and delivery.

Standard sizes, in corrugated, not printed, carried in stock. Write Department B for interesting prices.

CONSOLIDATED PAPER COMPANY
Monroe, Michigan
Branch Sales Offices
Baltimore Buffalo Indianapolis New York
Boston Chicago Cleveland Kansas City Pittsburgh

M1056

Defendant's Exhibit No. 5



WELL DESIGNED | WELL PRINTED | WELL WRAPPED

The RIGHT Bread Wrap Will help you sell more Bread

THE right bread wrap *stays* sealed when wrapped around your bread. The right bread wrap thus protects your bread and keeps it fresh and pure until it is ready for your customer to eat. The right bread wrap is well designed and presents your name and trade mark in such a manner that the public will ask for your bread again and again. The right bread wrap will help you sell more bread.

And the right bread wrap doesn't cost any more!

The big bakers of the country use the right bread wraps. They know, that next to the quality of their bread, comes the quality of their wraps.

Are you sure that you are using the right bread wraps? If not, we can help you. We KNOW what constitutes the right bread wrap—that's why we number some of the country's largest bakers on our list of customers. Write us today!

Are you interested in a cleaner and better way of selling rye bread, crullers, cakes, buns, etc.? **Ask us about our glassine and waxed paper bags.**

Cake Wraps? Glassine Bags?
Yes, we make them, too.
Just as good as "Newark" Bread Wraps.
Bread Wraps.

Newark Paraffine & Parchment Paper Co.
120 W. 42nd Street
New York

Mills: Newark, N. J.
Columbus, Ohio Pittston, Pa.

Defendant's Exhibit No. 6

CLASS OF SERVICE DESIRED	
TELEGRAM	
DAY LETTER	
NIGHT MESSAGE	
NIGHT LETTER	

Patron should mark an X opposite the class of service desired; OTHERWISE THE MESSAGE WILL BE TRANSMITTED AS A FULL RATE TELEGRAM

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT J. C. WILLEVER, FIRST VICE-PRESIDENT

Form 1206 A

NO.	CASH OR CHG.
5	RT.
CHECK	
38 NL	
TIME FILED	

Send the following message, subject to the terms on back hereof, which are hereby agreed to

PITTSFIELD MASS MAR 19 1926

DR E B BENGER

VISITING JOHNSON EDUCATOR BISCUIT COMPANY TODAY THEY ARE DISGUSTED WITH CELLOPHANE BECAUSE THEY EMPLOYED IT WITH UNDERSTANDING THAT IT WAS MOISTURE PROOF MADE FOUR OTHER CALLS WITH HENDERSON WILL BE IN PITTSFIELD SATURDAY MORNING AND SEE BENZ MONDAY

P F WEBSTER

RECD RT 855A MAR 20 1926

M1062

Defendant's Exhibit No. 7

DEFENDANT'S EXHIBIT NO. 1083 A

H.C.

(File Copy)

May 25, 1926

B

C-5

Mr. O. F. Benz,
Sales Manager.

Subject:- Johnson Educator Biscuit Company

After the visit of Mr. Henderson and the writer to the Johnson Educator Biscuit Company, a package of crackers and cookies was received from them here at our laboratory. The assortment was made up of their small whole wheat crackers, a cookie named "Sparkles", which somewhat resembled graham crackers in consistency, and a hard coconut cookie. These were wrapped in Cellophane and were also packed in the special Johnson package which is covered on the top with Cellophane. After a week's time we began to open single packages in order to see whether they appeared as fresh as when first wrapped. All of the samples were satisfactory at the end of a week but within 10 days we could notice that the whole wheat crackers were beginning to be less crisp than when first packed. The "Sparkles" cookies seemed sufficiently crisp but they developed a rather queer taste, somewhat suggestive of rancid fats. We do not believe that the Cellophane wrap had any influence one way or the other upon the development of this queer taste. Nevertheless, it was there and was noticeable by all those who had tasted the crackers when they first arrived.

The coconut cookies seemed to keep perfectly. They were very hard when first received and seemed equally hard and fresh after having been wrapped for 6 weeks. This may have been due to the fact that like hard tack they will keep under almost any condition.

At the Johnson Company we were told that their crackers must be wrapped so as to keep properly for at least 60 days. Only the coconut cookies would satisfactorily meet this test when wrapped in Cellophane. As a rule it would seem to be unwise to use Cellophane wraps on the crackers and cookies which must be kept perfectly dry for any length of time in order to retain their crispness.

M 1063

Here in Buffalo we occasionally purchase a package of the Mama cookies which have been standing on the counter for several days and have always found them to be entirely palatable. This would indicate that under special conditions and for special types of crackers or cookies our normal Cellophane is quite satisfactory, but when it comes to wrapping all the products of a bakery in packages which will stand for more than, say, two weeks before going to the consumer, the use of Cellophane wraps would seem inadvisable.

In anticipation of your arrival here last week we had purchased some doughnuts and an angel food cake. These were divided into two parts, half of which were wrapped in Cellophane and the remainder in our waterproof material. After 5 days the cake and doughnuts covered with normal Cellophane had become very dry and hard, thus showing a marked contrast to the samples which had been covered with the waterproof material. These were in first class condition being far softer and more palatable than similar materials which had been covered with normal Cellophane for only a day. We are preparing another set of samples similar to these, which you can inspect for yourself on your next visit.

Chemical Division,

Per P.F.W. /s/
P. F. Webster

PFW:EK

M 1063

Defendant's Exhibit No. B

DUPONT CELLOPHANE

DU PONT CELLOPHANE COMPANY, INC.
NEW YORK, N. Y.

June 1,1926

Mr. Paul F. Webster,
Chemical Division,
Buffalo

Subject: Johnson Educator Biscuit Co.

Thank you for your letter of May 25th. We will keep in touch with the above concern, as they are logical users of an odorless, waterproof Cellophane which can be sealed.

Very truly yours,

O.F.B.

Sales Manager

OFB/o

M 1064

Defendant's Exhibit No. 9

DU PONT CELLOPHANE

DU PONT CELLOPHANE COMPANY, INC.
NEW YORK, N. Y.

September 20,1926

Mr. Paul F. Webster,
Chemical Division

There is a concern by the name of Dad's Original Oatmeal Cookie Company that has working arrangements with cookie manufacturers in cities scattered throughout the United States.

They contend that the type of cookie they manufacture according to their formula will not stand up in "Cellophane"; that during humid weather, the cookies soften and stick together.

Will you please pick up a few packages of these cookies, which you will find around Buffalo, and wrap some in No. 300 and No. 450 regular, as well as one or two packages in the special waterproof "Cellophane", subjecting them to high humidity, and let us know how they stand up?

As we understand it, Dad's Oatmeal Cookies are now distributed in large glass jars, which are placed on the retail counter and sold in bulk, at 20¢ per dozen.

If a satisfactory "Cellophane" package can be worked out, there is an opportunity for its distribution throughout the Atlantic Coast states and other parts of the country.

Very truly yours,

RMH/c

Assistant Sales Manager

M 1065

Defendant's Exhibit No. 10

September 21, 1926

C-5

Mr. K. H. Hersey
Asst. Sales Manager

Your letter concerning the Dad's Original Oatmeal Cookie Company has just been received. I will try to purchase samples of these cookies within the next 24 hours and will start the tests in normal and in water-proof Cellophane immediately thereafter.

FILE COPY

Chemical Division

Per: PFW
P. F. Webster

PFW:EK

M1066

Defendant's Exhibit No. 11

DU PONT CELLOPHANE COMPANY, INC.

GENERAL SALES OFFICE
40 WEST 40TH STREET
NEW YORK, N. Y.

C-31

Chicago, Illinois
May 18th, 1927

Mr. P.F. Webster
DuPont Cellophane Co.
Buffalo, New York

Dear Paul:

We visited the Purity Baking Company this morning and had a talk with a Miss Brook, who is in charge of their laboratory.

She gave us some rather startling results, as you will note below, and we feel that something should be done about it. We have already started further tests comparing our W.P. grade of "Cellophane" with their waxed glassine paper, which, from all appearances, is the best thing that I have come across.

I will follow this up from day to day, checking the decrease in weight of the cakes wrapped. Two kinds of cakes are being used, cocoanut layer (which Miss Brook says loses more moisture than any other cake they are putting out) and lemon fluff. Both of these cakes are very soft and spongy. The cakes are left standing in the laboratory at room temperature.

I am enclosing a sample of this waxed glassine paper and would like to have some permeability tests run on in immediately. Further samples of this paper will be sent as soon as I can get some.

Results of First Tests.
Percentage of loss in Weight

	Waxed Glassine	W.P. Cellophane
4 Days	1.4 % - .77%	9.3%
6 Days	2.24% - .94%	11.78%

Yours very truly,

Ralph C. Scholly

RCS/LS

PLANT AND EXECUTIVE OFFICES
BUFFALO, N. Y.

Address All Communications to the Company, Not to Individuals

M1070

Defendant's Exhibit No. 12

October 25,1927

MR. O. F. BENZ
Sales Manager

LOWE MILES BISCUIT CO.

A visit was made to this company with Mr. Blair, in answer to a complaint that Moistureproof Cellophane was not holding up as well as expected. Their Mr. Watterson turned us over to Mr. Gillette, the Assistant Chemist.

The results of their tests on fruit cake, run in a desiccator over calcium chloride for a period of two weeks, were not satisfactory. The results of the tests were as follows:

1. Moistureproof Cellophane to dat. lost 1.3% in weight.
2. Waxed glassine paper lost in weight .3%.
3. Waxed sulphite paper lost in weight .9%.

These results would indicate that Moistureproof Cellophane was far below the other moistureproof wraps.

The cake wrapped with two pieces of Moistureproof Cellophane held up slightly better than the waxed glassine paper.

It was impossible to determine by feeling, which wrapped cake was the harder.

Mr. Gillette has already started another series of experiments in which he is using on fruit cake, Moistureproof Cellophane singly and doubly wrapped, waxed glassine paper and waxed sulphite paper.

To date, the Moistureproof Cellophane seems to be holding up equally as well as the waxed glassine paper.

The following suggestions were made:

1. That tests be made in Buffalo by our chemists merely as a check.
2. Try comparative sales tests with fruit cake wrapped in waxed glassine paper and Moistureproof Cellophane.

M10

Mr. Watterson seems to be of the opinion that it will be necessary to use a double wrap of Moistureproof Cellophane - the writer, however, does not feel that that is at all essential.

Why Mr. Gillette should get such a high permeability factor for Moistureproof Cellophane in comparison with waxed glassine paper is not known, unless it is the method which they are using for testing their material.

Our Buffalo laboratory, however, should be able to check these figures and give us a fairly representative test under similar conditions, that should give us an answer to the ability of Moistureproof Cellophane holding up under extreme conditions.

RCS

R. C. SCHILLY

Chemical Division

M 1068

Defendant's Exhibit No. 14.

DUPONT CELLOPHANE

DU PONT CELLOPHANE COMPANY, INC.

NEW YORK, N. Y.

September 22, 1928.

BUFFALO,
DR. WM. HALE CHARCH,
Chemical Division.

LOOSE WILES BISCUIT COMPANY

This concern, for the past six weeks, has been conducting a series of permeability tests on Moistureproof "Cellophane" left with them last August. At that time Mr. Padden, in charge of their laboratory, stated that the results of their tests on Moistureproof "Cellophane" would determine whether or not it would be used this season as a wrap for their fruit cakes: that the permeability factor would have to be considerably better than those secured last year.

We have just recently heard from Mr. Padden on the outcome of this test. He stated that the permeability factor of Moistureproof "Cellophane" was considerably better than that of last year. However, the results secured after greasing the sheets of Moistureproof "Cellophane" and running permeability tests would not warrant his recommending the use of Moistureproof "Cellophane" as a single wrap on fruit cakes for this season. The greased "Cellophane" sheets allowed three times as much moisture to pass through them as ungreased sheets, and this he claims is far inferior to their present waxed glassine paper.

To all appearances, we apparently have lost the use of Moistureproof "Cellophane" on fruit cakes by this concern, unless you might have something to offer which may offset this loss in Moistureproofness due to contact with a film of grease.

R. C. Schilly,
Technical Service Division.

RCS:CF

M1072

Defendant's Exhibit No. 15

cc: Br. Benz

Buffalo, New York

September 29, 1928

File CD-C-5

Mr. R. C. Schilly,
New York Office.

SUBJECT: - LOOSE WILES BISCUIT COMPANY

With reference to your letter of September 28, referring to the fact that greased Moistureproof Cellophane shows a loss in permeability, we have nothing to suggest or add at this time as a remedy for this behavior on the part of Moistureproof. We have known for a long time that the presence of large amounts of grease on the material causes a loss in permeability and that we have no way of overcoming this loss. Our experiments here have not shown quite as much of a loss in moistureproofness as have the Loose Wiles tests. We have found, roughly, that about 50% of the moistureproofness is lost, whereas Loose Wiles report about two-thirds loss.

The only suggestion we can offer along this line would be a double wrap, the inner wrap being regular Cellophane and the outer wrap being Moistureproof. There would be no necessity for having two wraps of Moistureproof.

W. H. Church,
ASSISTANT CHEMICAL DIRECTOR.

WHC:BW

Defendant's Exhibit No. 46

DU PONT CELLOPHANE

TRADE REPORT Factory Copy

NO 33

Territory _____ Salesman Buddell Schilly Date 12/15/27

Firm Thomas Boulston Co. Business Food Prod. Class _____

Street & No. _____ City B'klyn State N.Y.

Interviewed Mr. Kelly Title _____ Buyer _____

Who will make final decision _____ Title _____

Cellophane Used	Use & Type of Package	Purchased from	Approx. Consumption Nos. 12 Months	Trial call to be made
No. _____ Sheets _____ Rolls _____ Dues _____ Envelopes _____ Misc. _____				

1. Now Using:—Cellophane _____ Foil _____ Glassine _____ Wax Paper _____ Misc. _____

2. Products on which Cellophane could be used: _____

3. New Products under Development: _____

4. What did you Recommend?

5. When will Decision be made? _____

6. What is next step to close sale?

7. Did you book customer's requirements? _____ If not when? _____

Answer Questions 4 and 6 and make general remarks below.

Date of Last Call	Typed	Copies for
	12/21/27 S/L.	Mr. Buddell:

This concern in their trial tests wrapping an iced cake in "Moistureproof" "Cellophane" claim that the icing hardened, became brittle and broke when attempting to cut the cake-that this did not occur with cakes wrapped in waxed glassine.

Examination of cakes tested showed this to be true. It is possible that the "Moistureproof" "Cellophane" used was of a poor quality. This will be checked up by samples being sent to Buffalo for testing.

(Over)

M1067

Examination of the waxed glassine cakes showed an inside wrap of very thin waxed paper known as a "Butter Wrapper". This was placed directly on and around the upper sides of the cake where it was held closely by the moist icing. Peeling this off after ten days, showed the icing to be still soft and moist.

It is this inner wrap that is probably the answer to the hardening of the icing as it acts practically like a skin holding in the moisture.

1. New samples of "Moistureproof" "Cellophane" were left with directions to make the following wraps.

A. Moistureproof" "Cellophane" alone
B. "Moistureproof" "Cellophane" inside butter wrap.
C. "Moistureproof" "Cellophane" inside "Moistureproof" "Cellophane" wrap.
D. Waxed Glassine paper alone.
E. Waxed " " inside butter wrap.

Tests will be concluded Jan. 27th.

R.C. Schilly.

M 1067

Defendant's Exhibit No. 13

EXTRACTS FROM

"USE OF CELLOPHANE IN THE CAKE BAKING

INDUSTRY -- SUPPLEMENT TO MARKET SURVEY

REPORT # 3,

APRIL, 1928"

M5220

2519

SUPPLEMENT TO MARKET SURVEY REPORT #3

Use of "Cellophane"

in the Cake Baking Industry

April 1928

SUPPLEMENT TO BAKED GOODS SURVEY REPORT

SPECIAL REPORT ON CAKES

I OBJECTIVE - In view of the fact that cakes are apparently the best and most logical bakery product for volume and immediate development, this special supplement to the Baked Goods Survey is issued as a separate report.

II SOURCE OF INFORMATION - The facts in this report are the result of Mr. J. D. Rankin's investigation in the field and cover every bakery of any importance in Pittsburgh, Louisville, Columbus, Dayton, Cincinnati, Indianapolis, Terre Haute, and Evansville.

III STORY OF CAKE PACKAGES - As a preface to our survey a lot of history is in order.

The wholesale baker years ago started to bake cakes in large black pans and transferred them to other pans or delivered in the ones they were baked in. They simply slid them into a wagon or truck, the pan resting on arms or racks. Flies, dust, the shoppers' fingers and what not made them unsalable and it was found necessary to wrap the cakes. Thus wax paper came into popularity.

As business began to be handled on a larger scale, the baker used a box to facilitate carrying the cake without trays. Then to equalize costs the wrap was left off.

Later the cakes were again wrapped, as well as boxed. In addition a nice printed band improved the appearance of the cake. Then came the time when du Pont brought out Cellophane and started preaching good merchandising. This taught the glassine people a lesson and they brought out a waxed glassine. This makes a good show and business increased. But as this

M 5220

glassine cost twice the price of the old wrap, most concerns put <u>two, three, four, etc. cakes to the box</u> in order to cut costs.

There are many types of cake baked today. The layer cake both round and square. The tendency is towards the cut cake. This is a large cake, baked and cut into smaller cakes. Triangles, loaf cake, pound cake, fruit cake. The base of the cake is different but the tendency is towards sponge. It looks large and feels soft to the touch and is easy to handle.

And this, in a very brief way outlines the present status of the cake baker today.

<u>IV DISTRIBUTION</u> - Although the cake baking industry is young, it has had a large growth. There are many divisions -

(A) The large wholesaler who bakes only cakes.

(B) The large wholesaler who bakes <u>both cakes and bread.</u>

(C) The large chain store that bakes its own cake.

(D) The large chain store that buys cakes from others.

(E) The house to house baker.

A) The large cake baker is a specialist. He can give all of his time to one problem. He sells from trucks, city and country, expresses to agents, and makes drop shipments to stores, via express.

B) The large wholesaler, baking cake along with bread does so usually as a fill-in item. His distribution problem is different from his rival as his main load is bread which can be stacked up in the truck and he feels the box is necessary so-

he can stack the cakes to the roof. Another feature which keeps him in the cake game is that they have "exclusive accounts". He has the bread account and can have the cake business too. If he does not take it someone else will.

C) The large chain store baking their own cake feel they need boxes to stack the cakes on the counter and to facilitate handling on the trucks. Inside conditions are about the same as the above two. They control ordering, baking and selling within the organization.

D) Those chains will be of no direct interest other than aid us by requesting "Cellophane" wrapped goods to speed up sales.

E) The house to house baker is growing fast and has a better than average chance to survive competition. We fit here but to what degree experiment only will tell.

At present about 33 percent of the cakes baked in a large bakery are sold in the same city and the rest go to the country or are shipped by express or freight to distant agents. This, of course, will vary with local conditions. But in solving a distribution problem without considering out of town shipments, one would leave out fully half of the plant production.

V SELLING PRACTICES - The baker's salesman goes into the store and looks the stock over and replenishes it according to his own judgment. Some ask the storekeeper what he wants, but the best salesmen do not. We are told the grocer does not know how to order and low sales and high stale returns result if he is depended upon. We find a higher class man in charge of the delicatessen.

It is the practice to date the cake on the band or the box to govern how long the cake should be out and automatically returning it to the bakery at the end of this time. This varies from

M 5220

10 days in the winter to 7 days in the summer. But it takes "art" to bake a cake that will hold 7 days and still be good.

After the cake is out, its limit set by company policy, it is brought in regardless of its appearance as the ingredients will not hold longer than the time set. If the salesman finds a cake is unsalable, he brings this in, too. Return goods run from 3% to 15% depending on the cake and on the plant.

It's rare to find a large plant running over 8% on an average. This is a serious problem in the industry and here is where we hope to fit in to our greatest benefit. It has not been proven that cake wrapped in "Cellophane" is kept more palatable than in other wrappers, but it will keep it softer longer and it will sell it faster. Regardless of how long a cake will hold up, if the salesman oversteps with slip shod methods and poor follow-up, his stale returns will go along high as ever. If his sales are stepped up, which "Cellophane" will surely do, it will be much easier for him to keep his stale returns in line, thus cutting costs.

A fresh cake is more palatable than an old one and it's best for the industry to move a cake within two days, for one eats more fresh cake. What is a fresh cake? Commercially speaking it is a cake soft to the touch. But since the advent of the sponge, this hardly holds good. It's a cake that both feels soft and tastes good.

The smaller variety of cake ranging from 5¢ to 25¢ sell best in the first part of the week, Monday, Tuesday, and Wednesday. Thursday, Friday, and Saturday, the 25¢ cakes and up sell better. This is quite significant. The baker who leaves the large cakes out the first part of the week can expect a large return.

M 5220

Salesmen vie for counter space and in doing so will stack their cakes on their competitors'. A salesman must stand in with the storekeeper to get a fair break if no special arrangements have been made. It is getting to be the custom for the baker to supply stands on contract or tables for display, etc.

The large chain store who bake their own cakes stack up the cakes on the counter and usually sell on demand only. The house to house baker sells - wrapped in wax paper, or from a tray, or gets the housewife to the wagon, or carries a patented covered display case, or the cake unwrapped in an open basket. The last is the general practice.

VI SHOPPING CUSTOMS - Approximately 90% of all cakes bought are bought through the appeal to the eye or by impulse. (Wholesale variety)

Most people feel a cake to determine its freshness. Some take off the wrapper to see it. About 19% of all of the people buy baker's cake and 98% of the 81% who do not, say "Because it's no good". It may have been a good cake at the baking, but its condition at the time eaten interests the buyer. It seems as though certain cakes always sell but some bakers find it advisable to change the variety from time to time. Some only change the icing. People learn to know good cakes and to buy a great deal by brand.

VII ECONOMICS OF THE INDUSTRY - The general selling prices for cakes give the dealer approximately a 25% profit on the cost of the cake.

WHOLESALE PRICE	RETAIL PRICE
4¢	5¢
16¢	20¢
24¢	30¢
20¢	25¢
30¢	35¢
50¢	65¢
80¢	$1.00

M 5220

It is advisable for the present to consider "Cellophane" only on cakes which retail for 25¢ and up.

With the present set-up box, glassine, etc. wrapping costs run from 5% to 10%. Labor about 2%. As the cakes tend towards the large or sponge variety, the size wrap required is larger and the cost higher than for a pound or heavier cake. Duplicating the present set-up, using "Cellophane" instead of glassine, it is usually not possible to use "Cellophane" on cakes selling at less than 25¢ at a profit as the increased cost is more than the added net profit. However, it is necessary and possible to do away with the present box and glassine and this will absorb part of the proposed cost.

VIII PROGRESS OF MOISTUREPROOF CELLOPHANE

As regular "Cellophane" had proved unsatisfactory in several cases, it is interesting to note the start of the new Moistureproof. About a year ago Liberty Baking Company of Pittsburgh, Pa. got Moistureproof "Cellophane" and started to wrap a pound cake, uniform varities, nut and marble. This "Cellophane" was from the laboratory as we hadn't gone into regular production as yet.

At first they had no return goods and the sales went sky high. Over the year an average increase went from $ 00.00 per week to $950.00, but due to poor supervision stale returns are about normal 2½%.

Most everyone used Moistureproof "Cellophane" on fruit cakes this year with marked results. Sales increases were reported almost unanimously among the larger bakers and they signify their intention of repeating the package. Others who didn't use Moistureproof "Cellophane" will be sure to adopt it this year as they know the success of their competitors.

M.5220

Following Liberty Baking up to the present, are the following successful users of Moisture-proof "Cellophane" on varieties of cakes.

1. The C. F. Renz & Sons Company of Lima, Ohio, have several varieties of loaf cakes in Moistureproof "Cellophane", and two types of jelly rolls, all going well.

2. The Dietzens Steam Bakery of Anderson, Indiana have five types of cakes wrapped.

3. The Seven Baker Brothers have cup cakes and one layer cake.

4. The Continental Baking Company have a died out box wrapped in Moistureproof "Cellophane" which is taking hold with signs of permanency.

5. Roulston Stores, Brooklyn, N.Y. 4 varieties.

6. Whitehouse Baking Company, Boston, Mass. have eight varieties in Mofstureproof.

IX METHODS OF USING CELLOPHANE

There are two methods of wrapping a cake.

One is the confectioner's fold on top of the cake with turned under end folds. The band is glued to itself. The other is a glued side seam with the ends glued, turned under or side folds made around the cake with the bottom brought up and the top down and the band applied or glued. The band is glued to itself.

The first is the speediest but takes the larger sheet of "Cellophane". Unless special equipment or methods are used the glued job will increase the labor cost considerably.

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K COST DATA - WRAPPING COSTS

The following costs are itemized very carefully to give us the information on every form of boxing and wrapping cakes, both in waxed glassine and Moistureproof "Cellophane".

1) Their present cost.

2) The cost if "Cellophane" were used, with the box.

3) The cost if "Cellophane" were used, without the box.

4) If "Cellophane" were used according to our measurements with the box.

5) If "Cellophane" were used according to our measurements without the box.

6) The cost of using the glue method, with the box.

7) The cost of using the glue method, without the box.

Loaf Cake With Butter Cream Icing

1) Oblong. Clear waxed glassine 18# per pound. (12x16) per 1,000 sheets	$2.11
Butter wax tissue top (Conf.Fold is used)	.25
Cardboard disc bottom	1.00
Band, gummed, 2 colors	1.50
Box $15.00 per 1,000 (2 cakes to the box)	7.50
Total cost per 1,000 cakes	$12.36
2) Boxed	
M.P.Cellophane 12x16 [illegible] (Conf.fold is used)	$16.32
Cardboard disc waxed	1.00
Band	1.50
Box	7.50
Total	$26.32

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3) No Box		
Moistureproof "Cellophane"		$16.32
Disc		1.00
Band		1.50
	Total	$18.82
4) Boxed		
Moistureproof "Cellophane"	11 x 15	$14.02
Disc		1.00
Band		1.50
Box		7.50
	Total	$24.02
5) No Box		
Moistureproof "Cellophane"	11 x 15	$14.02
Disc		1.00
Band		1.50
	Total	$16.52
6) Boxed		
Moistureproof "Cellophane"	10½ x 12½	$11.16
Disc		1.00
Band		1.50
Box		7.50
	Total	$21.16
7) No Box		
Moistureproof "Cellophane"	10½ x 12½"	$11.16
Disc		1.00
Band		1.50
	Total	$13.66

Triangle - Butter Cream Topping

1) Waxed glassine 12x14 per thousand	$ 1.85
Board bottom	.60
Butter tissue	.25
Insert label	.25
Box - 4 cakes to the box	3.75
Total	$ 6.70

M 5220

2) Moistureproof "Cellophane" 12 x16	$14.28
Insert Label	.25
Board bottom	.60
Box	3.75
Total	$18.88

3) Moistureproof "Cellophane"	$14.28
Insert	.25
Board Bottom	.60
Total	$15.13

As there is only one way to wrap this odd shape, the confection fold and as the sheet is cut correctly there will be only the above figures for this triangle cake.

25¢ Luncheon Layer Round

1) Waxed Glassine 12 x 18	$ 2.38
Butter Wax paper	.30
Disc	1.00
Box 2 cakes $15.00 per 1,000	7.50
Band	1.50
Total	$12.68

2) Moistureproof "Cellophane" per 1,000	$18.26
Disc	1.00
Band	1.50
Box	7.50
Total	$28.26

3) Moistureproof "Cellophane"	$18.26
Disc	1.00
Band	1.50
Total	$20.76

M 5220

18
12
36
18
16
1
1788
1
1886

4) Moistureproof "Cellophane" 11 x 18		$16.83
Disc		1.00
Band		1.50
Box		7.50
	Total	$26.83
5) "Cellophane" 11 x 18		$16.83
Disc		1.00
Band		1.50
	Total	$19.33
6) Moistureproof "Cellophane" 11 x 16½		$15.43
Disc		1.00
Band		1.50
Box		7.50
	Total	$25.43
7) Moistureproof "Cellophane"		$15.43
Disc		1.00
Band		1.50
	Total	$17.93

Party Bars

1) Waxed Glassine per 1,000 14x16		$ 2.46
Butter tissue		.40
Board		1.00
Band		1.60
Box 2 cakes $15.00		7.50
	Total	$12.96
2) Moistureproof "Cellophane" 14 x 16		$19.04
Board		1.00
Band		1.60
Box		7.50
	Total	$29.14

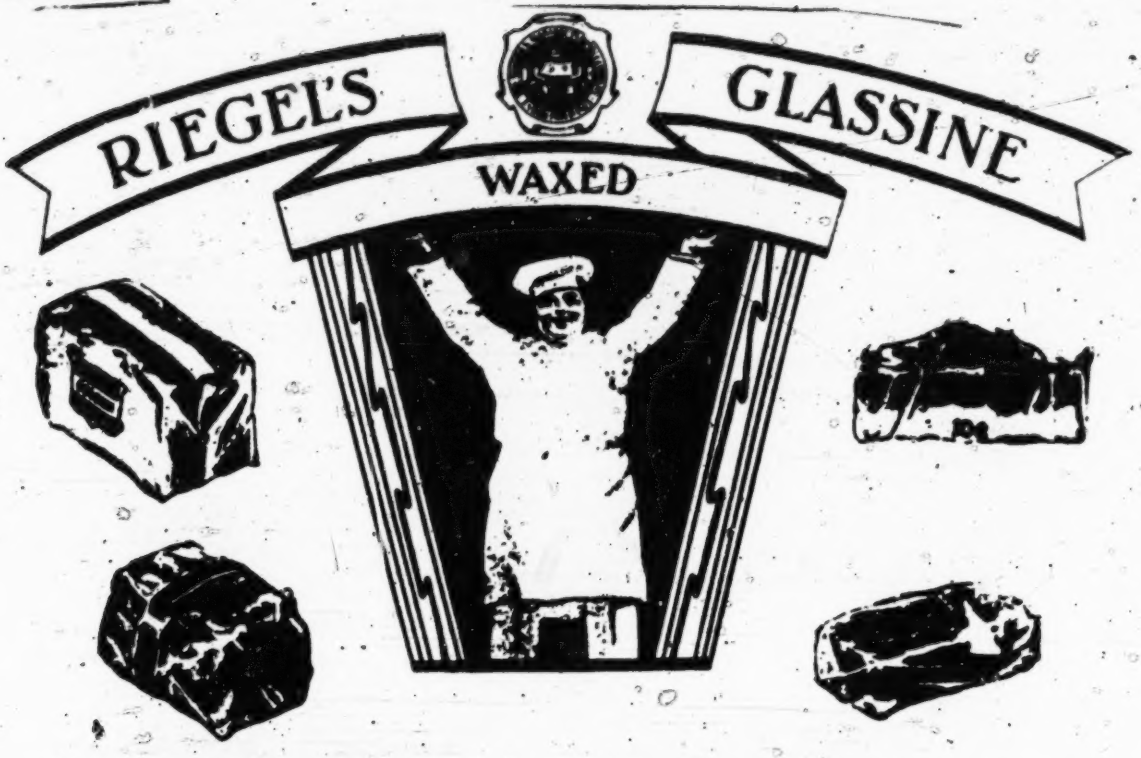
M 5220

3) Moistureproof "Cellophane"		$19.04
Board		1.00
Band		1.60
	Total	$21.64
4) Moistureproof "Cellophane" 13 x 15		$16.58
Board		1.00
Band		1.60
Box		7.50
	Total	$26.68
5) Moistureproof "Cellophane"		$16.58
Board		1.00
Band		1.60
	Total	$19.18
6) Moistureproof "Cellophane"		$14.03
Board		1.00
Band		1.60
Box		7.50
	Total	$24.13
7) Moistureproof "Cellophane"		$14.03
Board		1.00
Band		1.60
	Total	$16.63

XI OVERCOMING COST OBJECTIONS, ETC.

In analyzing these figures it is easy to see that there will be an increase in wrapping cost if "Cellophane" is to merely replace glassine. The present net profit is in most instances not so much as the added cost. We will also note the most logical thing to do is to eliminate some unnecessary expense. In most instances, careful measurement will allow a smaller sheet without decreasing the wrapping efficiency.

M 5220



CONSUMER'S ACCEPTANCE

Clean, appetising, fresh and attractive—that's the way your products look when carefully wrapped in RIEGEL'S WAXED GLASSINE. More salable, too, for isn't it natural to have preference for and to buy a product that is well protected and in good condition? Write for sample sheets of RIEGEL'S WAXED GLASSINE. Experiment with the samples—see how Glassine enhances the appearance of your package and fully protects it.

Important to you, from a profit standpoint, a film of wax makes the Glassine paper impervious to Grease or Dampness. Why "from a profit standpoint"? Because a wrapper of RIEGEL'S WAXED GLASSINE protects food products and the like from harmful atmospheric conditions; the product is delivered to the consumer in first class condition, which means increased consumer acceptance, more sales, hence more profits for you.

RIEGEL'S WAXED
GLASSINE
Jewel Brand

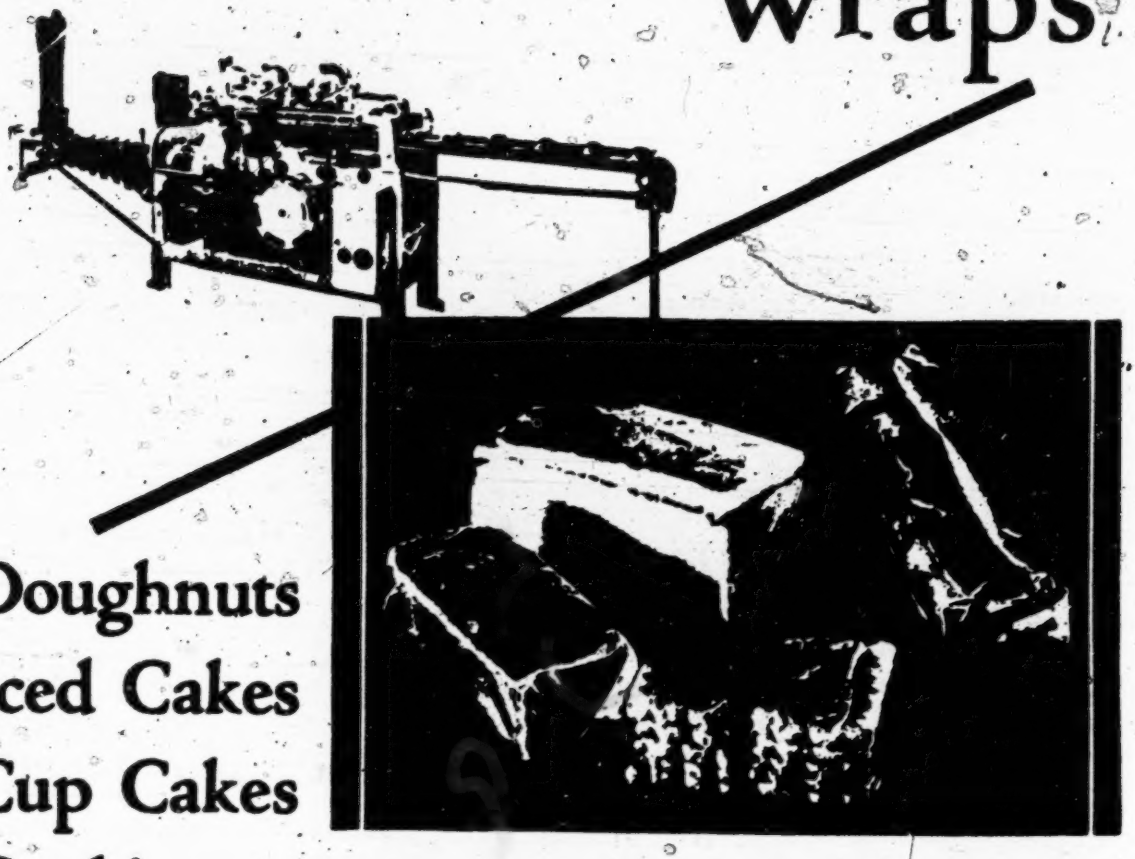
MADE ONLY BY
THE WARREN MANUFACTURING COMPANY
342 MADISON AVENUE
New York City

PROTECTS DISPLAYS

Bakers Weekly

Defendant's Exhibit No. 20

Wraps



Doughnuts
Iced Cakes
Cup Cakes
Cookies

in Cellophane
Glassine
Waxed Paper

Locates printed design on the package

This improved wrapping machine has these important advantages:

1. It wraps a much wider range of products, and is easily adjustable for different sizes, within certain limits.
2. You can use Cellophane for its greater sales appeal, glassine or waxed paper.
3. A new device (a photo-electric cell) may be attached to the machine so as to locate the printed design in exactly the right place on each package.

If you are wrapping by hand, you should look into the savings this machine effects—even when not run to its full capacity. Consider also the neater, more attractive package it makes. Perfect, secure sealing of the wrapper, impossible with hand wrapping, is a real sales advantage.

Send us your Products—we will show you how this machine would wrap them, and give you complete information.

Package Machinery Company
Springfield, Massachusetts

New York Chicago Los Angeles
London: Baker Perkins, Ltd.

Bakers Weekly

Defendant's Exhibit No. 21

— INTRODUCING
A NEW STANDARD
OF CAKE WRAP VALUE

In this baking company one official felt the best way to increase cake sales was to make the best cake possible, but slender profits would not stand the added cost.

Then he heard of Riegelite, the new transparent cake wrap that would save three-fourths of their wrapping costs. He got a sample, wrapped it around the "Cake of Cakes," and showed it to the other officials. Did they like it? Well, clip the coupon, make the test yourself and see how *you* like it. Any one of eleven plants will send samples and prices at once.

RIEGELITE

is a transparent, moisture-proof wrap that gives distinctive sales appeal and costs so much less that it enables the baker to improve his quality or make a better profit.

RIEGELITE
IS NOW USED BY

Langendorf
Ward
Liberty
Hathaway
Farm Crest
Continental
Schaible
Brockleman Mkts.
Arnold & Abney
Bakeries Service
E. H. Koester
Tasty Baking
Scheur's
First Natl. Stores
Western Bakeries

and many,
many others

MADE FROM COAST TO COAST — SAVE FREIGHT — SPEED DELIVERIES
SEND COUPON TO THE NEAREST PLANT FOR LIBERAL SAMPLES

DALLAS	DIXIE WAX PAPER CO.
DETROIT	DETROIT WAX PAPER CO.
HAMILTON (ONTARIO)	APPLEFORD PAPER PRODUCTS, LTD.
KANSAS CITY	WAXIDE PAPER CO.
LOS ANGELES	WESTERN WAX PAPER CO.
MEMPHIS	DIXIE WAX PAPER CO.
NEW YORK	RIEGEL PAPER CORP., 342 Madison Ave.
OAKLAND, Cal.	WESTERN WAX PAPER CO.
PITTSBURGH	DETROIT WAX PAPER CO.
PORTLAND	WESTERN WAX PAPER CO.
ST. LOUIS	WAXIDE PAPER CO.

SEND ME SAMPLES OF RIEGELITE
and its INTERESTING PRICE

Name _____

Firm _____

Address _____

25

[for DECEMBER 26, 1931]

Bakers Weekly

Defendant's Exhibit No. 22

Why Ward Adopted RIEGELITE

THE MODERN WRAP FOR CAKE

This new transparent cake wrap was first developed for the Ward Baking Company —to maintain sales appeal and cut excessive wrapping cost. Riegelite is now being used on a number of Ward cakes and many other leading bakers have been quick to adopt it.

Riegelite is transparent enough for every practical purpose, gives protection second to no other wrap, and costs what a cake wrap ought to cost to be in line with a baker's normal margin of profit.

NATIONALLY MANUFACTURED
SAVES FREIGHT—SPEEDS DELIVERIES
SEND COUPON TO NEAREST MAKER

DALLAS — DIXIE WAX PAPER CO.
DETROIT — DETROIT WAX PAPER CO.
KANSAS CITY — WAXIDE PAPER CO.
MEMPHIS — DIXIE WAX PAPER CO.
NEW YORK — RIEGEL PAPER CORP. 342 Madison Ave.
PITTSBURGH — DETROIT WAX PAPER CO.
ST. LOUIS — WAXIDE PAPER CO.

SEND ME SAMPLES OF RIEGELITE and its INTERESTING PRICE

Name .....

Firm .....

Address .....

[BAKERS WEEKLY
Nov. 28, 1931

Defendant's Exhibit No. 23

Nov. 28, 1931.

Report of Interviews with Retail Independent Grocers on Ward's Cakes.

Called on 27 dealers (a number of others either did not carry Ward's, only had the boxed line or crullers, did not have the old and new wrappings for comparison, etc.) with the object of finding:

1. Whether they were aware that Ward had made any change.

2. Their attitude toward the new wrapping as compared to Cellophane.

Results were very uniform, as follows:

4 30 (Rollins)

1. Only 3 out of 27 were aware of a change in wrapping, and not one of these could be quite positive that he had noticed it on Ward's and not some other brand.

2. There were some complications here that might make percentages misleading. For instance, a few dealers could not distinguish between the two even when shown to them, while a good many thought that both were Cellophane. Not one could base his choice on any previous thought about the matter.

However, when once the difference is made clear, it is safe to say that a large majority of the trade prefer Cellophane, and most of these can make their preference genuine by giving definite reasons.

General comments:

As far as could be found, no consumer had noticed the difference in wrapping.

Several dealers remarked about a recent decline in the demand for Ward's. (Nothing could be brought out to show that wrapping had anything to do with this, however).

Although, as instructed, no mention was made of boxed cake or crullers, it is significant that a number of dealers voluntarily

M 5221

expressed anopinion that the boxes ought to be done away with and that crullers would sell better if wrapped in Ce llophane.

A number also made voluntary suggestions about the benefits of using Cellophane on coffee-rings, bread, muffins, potato chips, bread sticks and other products.

M 5221

Defendant's Exhibit No. 21

TRADE REPORT

(Sales Record Copy)

Sales Sec.	Service Sec.
Adv. Sec.	Tech. Sec.
Prom. Sec.	

Salesman: Graves — Date: 10/16/31 — No. 1018

Firm: Schaible's Bakery — Bus. Baker — Class 1-12

St. & No. — City Easton — State Pa.

Controlled by: Same

Final Decision by: J. E. Schaible — Contacted on this call? No

Buyer: Mr. Fritz — Contacted on this call? Yes

Type of Call* — Productive — Service X

Transparent Sheeting Used					Do't Prem	Estimated Consumption-Lbs. This Quarter	Estimated Consumption-Lbs. Next Quarter
300	X	P.T.	Bmk.	Inds X	Sylvania	500	None
400		P.C.	Sheets X	Misc.			
600		M.T. X	Rolls				
M.W.		M.C.	Lgts X				

If using competitive material, state reasons why: Due to falling off in cake business blamed oder of Cellophane (See below)

Items wrapped in Cellophane: Cake, Cookies

a. Sales tools used on this call:

Samples X Pack. Dev. Trav. Display

Photo Album Market Survey

Ad. Book Post Cancelled

b. Agreement account? No

c. Did you secure order? No If not, when?

d. Approx. date next call? Next Trip

e. If service call, state nature below:

Showed samples of ten different cakes being sold locally where sales are increasing.

Saw Mr. Fritz, P.A. and G.M., Mr. Schaible would not see me. Say that their cake business is still falling off and that they are not satisfied with Cellophane or Nymphwrap. They soon expect to go back to the use

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
9/13/31	10/20/31	AF 10/21	

CREATIVE WORK DONE

1. Has interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

of waxed paper. I told them of the similar experience of Tolley Cake in N.Y.C. and Great A.& P. on doughnuts in Belleville. This, however, did not cut much ice. With the cake display where each company was doing well, I asked them if they were sure that it was the fault of the Cellophane. They said it was. I shall continue to show cake samples and the minute their sales do not show up well in wax paper try to get them back on Cellophane.

M5123

2544

H5[illegible]

Defendant's Exhibit No. 25

GRC-1 REV. 15200-3 28-32

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman Wheat | Date 8-8-32 | No. 460

Firm Richmond Baking Company | Bus. Bakers | Class 2-4

St. & No. | City Richmond | State Ind.

Controlled by:

Final Decision by Mr. Quigg, Mr. Wildman & Exec. | Contacted on this call? Mr. Quigg

Buyer | Contacted on this call?

Type of Call* — Productive X | Service

Transparent Sheeting Used					Re't From	Estimated Consumption-lbs. This Quarter	Estimated Consumption-lbs. Next Quarter
300 X	P.T. X	Emb.	Sads		Brooks	100	100
450	P.C.	Sheets	Misc.		Milprint	25	25
600	M.T. X	Rolls					
H.W.	M.C.	1sts					

If using competitive material, state reasons why.

Items wrapped in Cellophane: Display cartons, sample units - of biscuits and wafers - Pecan rolls in revelation bags.

a. Sales tools used on this call:

Samples X | Pack. Dev. X | Trav. Display

Photo Album | Market Survey X

Ad. Book X | Post Campaign

b. Agreement account? No

c. Did you secure order? No | If not, when?

d. Approx. date next call? Sched.

e. If service call, state nature below:

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
4-28-32	8-10-32	8-10-32	

CREATIVE WORK DONE

Defendant's Exhibit No. 26

SCN

SALES RECORD COPY
DIST. MGR. COPY
ASST. D. M. COPY
SALESMAN'S COPY
FOLDER COPY

CESSATION OF and DECREASE IN SALES

Period Ending: Jan., Feb., Incl.

Salesman Stearns Dept. Food Products

Firm Grand A. & P. Tea Co. Town Detroit, Mich. Class 1418

In checking the Sales Records of this account we find a Cessation Decrease as shown by the figures given below:

	Sales
1st half 1931	4187
2nd half 1931	3179
1st 2 mos. 1932	907

Lowered direct sales in second half appear to be due to discontinuance of MIF and SST on fresh meat tests for which a total of 1187 lbs. were purchased in first six months. Although several new items were brought out during the latter part of

Sales Record Section
By N.C.L.

Reasons for this Cessation or Decrease should be given below in detail; also your program for regaining this business. If competition is involved, explain fully why we lost business.

1931, no gain is shown in M.T. sales. This is apparently due to switch to Riegelite for doughnuts in latter part of second half. No improvement in volume is evidenced during first two months of 1932.

Improvement in volume should show very soon as great proportion of bakery cakes, sweet dough items and specialties are in Cellophane now. Cakes discontinued at Louisville because Mgr. there said sales were just as good in glassine. Working for pies - readoption on doughnuts. All candies to be in Cellophane.

M5007

Salesman _____

District Mgr. _____

Defendant's Exhibit No. 27

DUPONT CELLOPHANE

TRADE REPORT

(Main Office Copy)

Salesman		Date	No.
Firm	MacDonald	Bus. 2-26-32	Class 186
St. & No.	Royal Baking Co.	City Bakers	State 2-6
Controlled by	725 Brown St.	Phila.	Pa.
Final Decision by		Contacted on this call?	
Buyer	Chas. Huth	Contacted on this call?	yes
Type of Call* — Productive	same	Service	*

Transparent Sheeting Used				Re't From	Estimated Consumption-lbs. This Quarter	Estimated Consumption-lbs. Next Quarter
300	P.T.	Emb.	Inds			
450 X	P.C.	Sheets	Misc. X	DuPont		300
600	M.T.	Rolls X		Regelite	600	300
H.W.	M.C. X	Lots				

If using competitive material, state reasons why Replacing Cellophane with Regelite on 5 and 10¢ account losing money on these items at todays prices. Layer, marble and round cake.

a. Sales tools used on this call:	b. Agreement account?
Samples / Pack. Dev. / Trav. Display	c. Did you secure order? NO If not, when 2 mos.
Photo Album X / Market Survey	d. Approx. date next call? NO
Ad. Book / Post Campaign	e. If service call, state nature below: Schedule

Discussed elimination of Cellophane on low price items as covered in W.O.H. letter 2-24. Huth claims price situation compels him to cut cost or go out of business. Will go back to Cellophane on 5¢ items when price situation permits him to make a profit. Continuing Cellophane on the larger cakes.

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
11-4-31	2-9-32	2-23-32	

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give?

DUPONT CELLOPHANE MAR - 1 1932 NEW YORK SALES & ADM. OFFICE

1. Chas. Huth, Prop.
2. Cakes, 5¢ pies and Donuts.
3. None
4. None
5. Replaced Sylvania with Cellophane on 20¢ and over cakes. Lower priced cakes put in Regelite
6. Suggested their reconsideration of Cellophane for low priced units, pointing out special need today for both quality in cakes and visable packaging to stimulate buying impulse. Less protection and inferior looking unit will reflect in consumers opinion of quality of product.
7. Intends to determine if any sales decrease from use of Regelite before considering changing back to Cellophane. Claim, so far sales have held up. Contends must use Regelite or raise price and not prepared to raise price at this time.
8. Check on sales results and endeavor to have him make test comparative with Cellophane at 1/2¢ higher price, if necessary.
9. None.

M5012

Defendant's Exhibit No. 28

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy) C.T.

Salesman Wallace and Estabrook Date 5-19-32 No. 452

Firm Purity Bakeries Cor. Bus. Bakers Class 1-12

St. & No. 844 Rush St., City Chicago State Ill.

Controlled by

Final Decision by R. Dodson, T. Jones Contacted this call? 1st

Buyer A.K. Koss Contacted this call? Yes

Type of Call — Productive X Service

Transparent Sheeting Used				Bo't From	Estimated Consumption lbs. This Quarter	Estimated Consumption lbs. Next Quarter
300X	P.T. X	Cash	Ends	us	15,000	15,000
450	P.C.	Sheets	Misc. X Bags	Shell.		2,000
600	M.T. X	Rolls		Millpt.		5,000
H.W.	M.C.	Lith	X			

If using competitive material, state reasons why

Items wrapped in Cellophane Cakes, cookies, fruit cakes, donuts.

a. Sales tools used on this call	b. Agreement account? Yes
Samples X Pack. Dev. Trav. Display	c. Did you secure order? No If not, when?
Photo Album Market Survey	d. Approx. date next call? Sched.
Ad Book Pool Campaign	e. If service call, state reason below

Covered price reduction with R. Dodson.

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies to
5-2-32	5-23-32	5-23-32	

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

1- Mr. R. Dodson, S.M. A.K. Koss, P.A.
E.E. Chandler, Ass't. Treas.
Mr. Benbennick, Costs
Miss Brooks, Chemist.

2- Baked goods.

3- None
4- "
5- Trying out item at Pittsburgh in Seconds. Mr. Dodson has requested report on experiences with this shipment from standpoint of Cello hane run for quality. We have wired so that this will be covred too, by our representative.

6- Suggested they put out a layer cake of quality (not iced) and feature fact housewife can ice with their own make of icing. Outlined fact Kroger's angel food cake is being treated in this manner by consumer.

7- Mr. Dodson did not indicate interest in suggestion.

8- Follow possibility of using some seconds on low priced items.
9- None.
General - We checked up on ratio of use of ellophane- versus Glassine on cakes- 5 Glassine to 1 Cellophane.
Endeavored to check ratio of cost Glassine o Cellophane, and they say on basis of seconds it ould be 2 to 1.

M 5013

Defendant's Exhibit No. 29

DUPONT CELLOPHANE

TRADE REPORT

(Director of Sales Copy)

Salesman Dunphy Date 1/1/32 No. 1195

Firm Goody Kake Co. Type Baked Gds Class 1-18

St. & No. 190 Bright St City JC State NJ

Contacted by:

Final Decision by Mr. I. Ohl - Pres Contacted on this call? Yes

Buyer Contacted on this call?

Type of Call — Product(s) X Service

Transparent Sheeting Used						Bot From	Estimated Consumption-Sq. Ins. This Quarter	Estimated Consumption-Sq. Ins. Next Quarter
600	X	P.T.	Bush.	Indv. X		Du ont	5.10	2,000
450		P.C.	Sheets	X	Misc.	Sylvania	2000	?
600		M.T.	X	Rolls				
M.W.		M.C.		Ind.				

If using competitive material, state reasons why. Better terms

Items wrapped in Cellophane: About 10 cake units.

a. Sales tools used on this call:	b. Agreement secured? no
Samples X Push Dec. Trav. Display	c. Did you secure order? Yes If not, why?
Photo Album Market Survey	d. Approx. date next call? 8gh
Ad. Book X Post Cancelled X	e. If carrier call, state actions below:

Presented Fisher's roll unit in boat wrap

Date of last Prod. Call	Date of Sample Offer	Date Typed	Copies for
11/1/32	11/3/32 10	11/3	

CREATIVE WORK DONE

1. Men interviewed and When.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

1. Mr. I. Ohl, Pres.
2. Cakes - roll s
3. Cup Cakes (5¢ Unit)
4. None
5. Still working on 3 cup cakes for 5¢
6. a - Jelly roll - overwrap 3 0 .f.
   b - Coffee cake in 3 0 .f
   c - Advisability of going int a bread roll unit in boat overwra 3 0 .f giving maximum visibility and protection
7. Using glassine on this unit and it is going very well. Will not change to cellophane.
   b - Not in their line. Do not and will not make.
   c - Cannot compete with other roll mfgrs. Will stick t sweet goods.
8. Present new baked g od units.
9. None.

M5010

Defendant's Exhibit No. 30

BULLETIN

INSTRUCTION BULLETIN NO. 1-I

TO: C. F. BROWN

January 5th, 1933

LATEST NEWS REGARDING CONVERSION OF A.M. & F.CO. "STANDARD" BREAD WRAPPING MACHINE

After intensive work during the past month, the American Machine & Foundry Company have announced the development of standardized parts to convert their bread wrapping machines to handle M.S.T. Cellophane.

This set of parts will make it possible to handle sliced bread, unsliced bread, direct wrapped sweet dough items, trays, etc., in either M.S.T. Cellophane or waxed paper (interchangeably). Price - $75.00 complete F.O.B. plant, Brooklyn, New York. Installation charges by experienced mechanics are additional and at the regular service rates with which every user of this machine is familiar.

Note that the American Machine & Foundry Company guarantees successful operation, thus removing any doubt in the customer's mind as to what kind of results he may expect.

This is extremely important from our standpoint since it insures absolutely satisfactory machine conversion by the organization best suited to do such work, namely; the manufacturer of the machine. Note these very distinct advantages:

1. Thorough conversion with definite guarantee of satisfactory operation.
2. Competent installation by experienced service men with details of adjustments carefully explained to customer's operating department.
3. Speedy conversion service. Stock of parts is now available. American Machine & Foundry Company service men can contact promptly.
4. Machine equipped to permit quick change from waxed paper to Cellophane and vice versa by parts specifically designed for such service.

M1088

DUPONT CELLOPHANE CO. GENERAL SALES OFFICES

5. We gain the services of a widespread service organization competent to handle the general details of conversion, thus keeping our own Technical Service Section free to contact at trouble points (if developed).

6. Low cost insurance through efficient conversion is offered to assure satisfactory operation with a relatively expensive wrapping material.

7. Establishes confidence on the part of the customer in that he has a machine company with whom he is already acquainted, performing the necessary work.

8. Freedom on the part of the customer from any obligation to manufacturers of wrapping materials for parts installed or work done on his own equipment.

9. The machine manufacturer is aided and encouraged to continue development of new equipment and new machines.

As you can readily see from the above points, our own problem of developing important new fields for M.S.T. Cellophane is greatly assisted by having the machine problem definitely assumed by the original manufacturer.

The American Machine & Foundry Company have taken this progressive step in order to eliminate the only partially efficient conversion which has been made in the past and to thus help create new machine business. In return for this splendid cooperation on their part, we must include as a very vital part of our selling work, adherence to the program outlined above.

There are three main objections you will encounter on the part of the customer against the purchase of such equipment:

1. The customer will not invest the small sum necessary to insure a successful test.
   (In this case he has not been sufficiently sold to create real interest in Cellophane. There are few cases where sufficient volume of various items cannot be found to warrant the very small cost for the conversion parts).

2. A competitor has offered to convert his machine free of charge provided he purchases his requirements from them.
   (No customer should bind himself, by virtue of a few dollars worth of parts to a given source of material, nor can he de-

velop the feeling of confidence in such an installation as compared with the guaranteed devices offered by the original machine manufacturer).

3. A competitor has created the impression that he controls certain devices essential for successful operation or possibly has already installed certain parts.
(The very fact that the machine manufacturer guarantees successful operation means that special devices offered by a competitor are only a talking point, and not to be depended upon. Only by removal of such parts and the reconversion of the machine will the best possible operation be assured).

A number of these new sets of parts have already been installed. Operation has been successful in every way. Tests in every case have been followed by adoption on a commercial production basis.

In view of the facts outlined above, the instruction sheet sent you for the conversion of the American Machine & Foundry Company's "Standard" bread wrapping machine is, of course, obsolete.

It is essential you impress the customer with the great care that has been taken in working out the present program which is ideal from the standpoint of all concerned. Remember, your own work to logically expand the use of Cellophane in each baker's plant depends primarily upon efficient machine operation that you can definitely count upon.

One final point:

This program leaves our Technical Service Section with their hands free to cope with emergencies: -

(a) when trouble develops after the parts have been installed (remote).
(b) when needed for purely sales reasons (such occasions we trust will be very rare). Call upon them only under such emergencies and then give your reasons in detail.

C. F. Brown,
mb G.A.D.S.

P.S. Further information regarding conversion of other types of wrapping machines will be issued soon.

M 1088

Defendant's Exhibit No. 31

BULLETIN

150

INSTRUCTION BULLETIN NO. 9-I

TO: C. W. BROWN

January 27, 1933

"HAYSSEN" BREAD WRAPPING MACHINES

CAN NOW BE CONVERTED TO USE M.S.T. CELLOPHANE

As a result of our experimental work in a large Eastern bakery and at the plant of the Hayssen Manufacturing Company at Sheboygan, Wisconsin, we are able to announce that a very satisfactory conversion can be made on present "Hayssen" machines now in operation.

As in the case of the American Machine & Foundry "Standard" wrapping machines, these parts will make it possible to wrap sliced or unsliced bread, sweet dough products, trays, etc., in either M.S.T. Cellophane or waxed paper (interchangeably). Actually, the new parts will produce a better wrap with waxed paper than heretofore possible, which means just an added selling point in our favor.

Briefly, the new parts involve redesigned sheet delivery mechanism, elevator guides (for sliced bread), top tuckers, side and bottom heaters.

1. The cost of replacement parts for the "Reg" or #7-13 machine is $57.50 F.O.B. Sheboygan, Wisconsin. If more than one size package, add $11.00 for each additional unit.

2. The cost of parts for the larger #7-17 machine is $47.50 F.O.B. Sheboygan, Wisconsin, plus $11.00 for each additional unit of different size to be wrapped.

3. Detailed instructions for installation will be furnished by the Hayssen Manufacturing Company when sending the parts. Installing them is comparatively simple. Service men are not required. However in case of trouble they are available at the regular rates.

4. Four different types of bread identification are available on these machines:

M1089

(a) Ad-Seal-It bands around the middle of the loaf underneath the Cellophane. This is by far the most attractive method. The attachment costs $125.00 and requires the services of a Hayssen mechanic to install it. Time required will usually be one day. This attachment is comparatively new, but has been under extensive production tests in three large bakeries.

(b) Ad-Seal-It bands running lengthwise of the loaf underneath the Cellophane. (Some attachments are now in use running the band on the outside, but the inside application is preferable).

This new attachment, now being built for underneath feeding lengthwise of the loaf, will be priced at approximately $35.00 and can be easily installed by the baker. Due to the necessity of feeding the band with the Cellophane and temporarily sealing together, a wax coating on the band is mandatory. A 20 pound paper band with at least 10 pounds wax will work satisfactorily. (Note that wax paper is not needed under method (a).

(c) The third method is to use the Hayssen coupon inserter. Some machines already have this attachment. It is not practical to install new coupon attachments on existing machines. If the baker desires to replace the coupon attachment with the Ad-Seal-It mechanism, as outlined under (a), it can be done, but the change would be more or less permanent. The Ad-Seal-It attachment described under (b) can be installed without interferring with the coupon inserter, it being possible to run interchangeably.

(d) Printed roll stock.

5. Have the baker check his machine carefully to make certain it is in good operating condition before ordering the Cellophane parts. Many machines are "old-timers" and will require overhauling to bring them up to condition. The rubber feed rollers offer a good example of this point.

6. After the baker has decided on the size and shape of the unit have him send accurate final samples, carefully wrapped, to the Hayssen Manufacturing Company, Sheboygan, Wisconsin,

M1089

when ordering the Cellophane parts. Be sure the model and serial number is included with his order for parts.

7. Impress on your customer the fact that great care has been taken by the machine manufacturer and ourselves to assure the best possible efficiency of operation. Needless to say, a careful and complete job must be done both by you and by the baker.

A copy of the attached letter has been sent to all Hayssen owners reported on your Trade Reports since the release of M.S.T. Cellophane.

C. F. Brown,
G.A.D.S.

mb

P.S.- Place attached price charts in Technical Handbook under "Cellophane Cost Graphs". Destroy old ones.

M 1089

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
4-28-32	5-10-32	5-10-32	

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

1. Mr. Quigg, V.P. and S.M.
2. Biscuits, wafers, crackers, sweet dough items, special breads.
3. None
4. None
5. None
6. (a)Present Traveling Biscuit and Cracker display with view to stimulating interest and illustrating merchandising possibilities with some of their own products. Covered fully information contained in special presentation accompanying display.
(b)Suggested use of second class stock on special breads and sweet dough items. Related what other progressive bakers are doing in this direction - and wrapped number of representative samples for demonstration. Stressed protection, visibility, appetite appeal, quality touch and better display in retail stores.
7. (a)Claims to be very much interested in application of Cellophane, admits all merchandising advantages, but claims cost too high and that Cellophane wrapping would not fit in with their present production schedule Claims that machinery men have told him it is impossible to obtain satisfactory tight seal. Upon my refutation of these objections he frankly admitted their hesitancy was due exclusively to increased cost over waxed glassine.
(b)Expressed interest in special breads and sweet dough items. Will experiment with samples I am sending and will probably adopt.(Isuggested S.S.T. stock on those special breads, which have a high moisture content - this to prevent possible molding.
8. Get them started on sweet dough items, demonstrate possibilities, and then extend application.
9. None.

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Name of Concern,
Street Address,
City, State.

Attention. Mr. John Jones
President

Gentlemen:

Recently, our representative who calls on you requested us to send information on the conversion of your "Hayssen" bread wrapping machines to use M.S.T. (heat sealing) Cellophane.

We are pleased to announce our experimental work is now completed and the necessary parts can be secured from the Hayssen Manufacturing Company at Sheboygan, Wisconsin.

Cellophane and waxed paper can be used interchangeably, if desired. It has been found by actual test the efficiency of the machine (even with waxed paper) has been increased through the use of these parts.

The Hayssen Company advise that the cost of parts for the "Reg" or 7-15 machine will approximate $57.50, while parts for the larger 7-17 machine are priced at $47.50, F.O.B. Sheboygan, Wisconsin. Installation is simple and can be handled by your own plant mechanic, in accordance with detailed instructions sent by the manufacturer. Service men are available however, at the regular rates, if desired.

Two new Ad-Seal-It attachments have been made available for Cellophane wrapping, both placing the band beneath the sheet so that colors are brightened and brought to life. One attachment placed the band lengthwise of the loaf; the other around the middle of the loaf, the latter being more attractive and more suitable for a Cellophane wrapped package.

Our representative will see you in the very near future covering this matter in further detail. If in the meantime any questions should arise, please get in touch with us or write the Hayssen Manufacturing Company at Sheboygan, Wisconsin.

Cordially yours,

W. A. Boh, Mgr.
Technical Service Section,

mb

M 1980

Defendant's Exhibit No. 32

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman Swartwout — Date 1-9-33 C.T.S. — No. 28

Firm Brown Cracker & Candy Co. — Bus. Candy - biscuit & Crackers — Class 1-12

St. & No. 603 Caruth Street — City Dallas — State Texas

Controlled by Loose Wiles & Sons

Final Decision by L. Brown, Pres — Contacted on this call? Yes

Buyer Mr. Belleville, P.A — Contacted on this call? N

Type of Call? — Productive X — Service

Transparent Shorting Used		Be't From	Estimated Consumption Rs. This Quarter	Next Quarter
300 X P.T. X Emb. Inds. X		Ns	1000	1000
450 P.C. Shorts X Misc.		Nilprint	500	500
600 M.T. X Rolls		Brooks	500	500
H.W. M.C. Lots X				

If using competitive material, state reasons why

Items wrapped in Cellophane: 5¢ candy bars - mandrel bags - 10¢ cookies and biscuit items

a. Sales tools used on this call:

Samples — Pack. Dev. — Trav. Display

Photo Album X Market Survey

Ad. Book X Post Campaign

b. Agreement account? Yes (Brooks)

c. Did you secure order? — If not, when?

d. Approx. date next call? Sched.

e. If service call, state nature below

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
12-1-32	1-11-33	1-12-33	

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

1- Mr. J. Brown, Pres.; Mr. E. Alexander, S.M.; Mr. G. R. Belleville, P.A.
2- Candy - cakes and biscuits
3- None
4- Line of bags for cookie and cake items similar to Merchants Biscuit line - also some printed bags - will use about 100,000 bags a month here - Houston and San Antonio Branches - they are having their salesmen do the sacking in bags and sometimes leave Cellophane bags and have grocer do it - this licks problem of shipping so far very satisfactory, but believe will have to start putting up at factory and branches because volume becoming so big salesmen will not have time and cannot depent on retailer to do so.
5- See 4.
6- (1) Urged use of 300 M.T. direct overwrap on his cartons for English Wafers - 10¢ and 15¢ sellers and other similar items they are now wrapping in wax paper.
(2) Urged use of 300 M.T. wrap on his penny suckers.
7- (1) Above will consider this - only is cost conscious because claims cost five times as much to wrap in Cellophane as in wax paper.
(2) Will not consider - claims no profit in same as is and cannot consider because of costs.

8- Check developments - present samples of direct M.T. overwraps and get more candy in Cellophane.

9- None.

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Defendant's Exhibit No. 33

DUPONT CELLOPHANE

TRADE REPORT

C.T.S. (District Office File Copy)

Salesman: Swartwout Date: 3-20-33 No. 328

Firm: Brown Cracker & Candy Re: Candy-Bakes- 1-12

St. & No. 603 Caruth St. City: Dallas State: Tex.

Controlled by: Same & Loose Wiles

Final Decision by (Title): Mr. Brown, Pres. Contacted on this call? yes

Buyer: Mr. Belleville, P.A. Contacted on this call? yes

Others Contacted this call (Title): Mr. Alexander, S. Mgr.

Type of Call—Productive X Service

Sources of Supply	Est. Cons. Rs This Quarter	If using competitive material, state type and reasons
Us	1,000	
Milprint	500	
Brooks	500	

Items wrapped in Cellophane: 5¢ candy bars, mandrel bags, biscuit and cracker units. (More candy, biscuit and cracker items could be wrapped.)

Other products on which Cellophane could be used: (Note new products in work)

a. Sales tools used on this call:

Samples X Trav. Disp. Photos X Pack. Dev.

Cons. Ads. Trade Ads. Mkt. Bur.

b. Agreement account? (Yes Loose-Wiles)

c. Did you secure order?

d. Service and general remarks—below

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
2-16-33	3-23-33	3-24-33	

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1 - None.

2 - None definite, was cost minded.

3 - Urged action using M.S.T. as his box overwraps instead of waxed paper now using stressing. Urged in stores his pkgs. do not get display they would get with Cellophane on and also could ship in new markets because M.S.T. would get business in same. Above still cost minded. Claims he pays 8¢ a lb. for wax and 58¢ a lb. for Cellophane out of line.

4 - Work up window pkg. and push bags for more biscuit and cracker items.

5 - None.

M 5126

Defendant's Exhibit No. 34

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Name: Swartwout | Date: 10-30-33 | No. 1021

Brown Cracker & Candy Co. | Bus: Baker & Candy | Class: 1-12

& No. 603 Caruth St. | City: Dallas | State: Texas

Controlled by: Same

Call Division by (Titles): Mr. Brown, Pres. | Contacted on this call? out

Buyer: Mr. Belleville, P.A. | Contacted on this call? yes

Others Contacted on this call (Titles): Mr. Ballard, Candy Mgr., Alexander, S.M.

Type of Call - Productive X Service

Source of Supply	Est. Cons. Lbs. This Quarter	If using competitive material, state type and reasons
Is	1,000	
Milprint	500	
Brooks	500	

DUPONT CELLOPHANE SALES RECORD

Items wrapped in Cellophane: 5¢ bars, sticks box overwraps, bag line cookies and biscuit items, 10¢ cookie units.

Other products on which Cellophane could be used: (Note new products in work) Variety of candy units and Biscuits and Crackers.

Sales tools used on this call: | b. Agreement account? yes

Samples Trav. Disp. Photos X Pack. Dev. | c. Did you secure order? no

Cons. Ads. Trade Ads X Mkt. Sur. | d. Service and general remarks—below

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
9-19-33	11-2-33	11-2-33	

CREATIVE WORK DONE

1. New items on market since last call distribution, potential
2. Result of suggestions made on last call
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1 - Has out some box goods using printed bands 200 lbs. and has out 35¢ box cherries in P.T. and bagging some Xmas candies 400 lbs.

2 - See 1.

3 - (1) Stressed he bag his biscuit and cracker units at his factory because value of identification on package in getting repeat business and advised him from recent store surveys made in city that many of these units put up very sloppy by store managers and then are not getting correct display and urged he have salesman sell store managers on rack idea stressing proper display and put up of these units will cause a much greater volume. Above are considering bagging some of these items and using name on cardboard across closure of bag. Realizes he is not getting repeat business he could get with proper put up and identified bags. As for fig newtons he is now putting out in glassine he claims cannot afford Cellophane on these because are retailing as low as 9¢ a lb., and competition on this item will not allow him to raise costs even on Cellophane as he claims this a very competitive item and no money made out of this unit.

(2) Stressed to Ballard idea of Xmas candies in 1/2 and 1 lb., bags and especially using M.T. on hard candies. He claims he is going to put out a few this way and packing in plant using label and see if grocer will pay added packing costs and if will not will distribute bags in bulk containers and grocery can pack himself.

4 - Check above and work for more complete bag line of biscuit and cracker items and work on carton overwraps.

5 - None.

Defendant's Exhibit No. 35

TRADE REPORT

(District Office File Copy)

DUPONT CELLOPHANE

Salesman Apartment Date 2-7-33 No. 152

Firm Knott Baking Co. Bus. Bread-cakes 1-4

St. & No. 204 Okmulgee St. City Muskogee State Okla.

Controlled by: Same

Final Decision by Mr. Knott, Pres. Contacted on this call? yes

Buyer " " " Contacted on this call? "

Type of Call* — Productive X Service

Transparent Sheeting Used				Bo't From	Estimated Consumption-lbs. This Quarter	Next Quarter
300	P.T.	Emb.	Tabs			
450	P.C.	Sheets	Misc.			
600	M.T.	Rolls				
H.W.	M.C.	Lots				

If using competitive material, state reasons why.

Items wrapped in Cellophane: None

a. Sales tools used on this call:

Samples X Pack. Dev. Trav. Display

Photo Album X Market Survey X

Ad. Book Post Campaign

b. Agreement account? No

c. Did you secure order? If not, when?

d. Approx. date next call? sched.

e. If service call, state nature below:

Above has one Battle Creek Wrapping Machine.

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
1st call 2-7-33	2-10-33	2-10-33	

CREATIVE WORK DONE

Defendant's Exhibit No. 36

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman: Wheat — Date: 5-3-33 — No. 407

Firm: Dietzens Bakery, Ind. — Bus: Bakers — Class: 2-6

St. & No.: 2401 Meridian St. — City: Anderson — State: Ind.

Controlled by: Same

Final Decision by (Title): Albert Dietzen, Pres. — Contacted on this call? yes

Buyer: Mr. Wise — Contacted on this call? yes

Others Contacted this call (Titles):

Type of Call—Producing: X — Service:

Sources of Supply	Est. Cons. the This Quarter	If using competitive material, state type and reasons
Us	200	
Milprint	200	

Items wrapped in Cellophane: 15¢ cakes; wheat bread in Revelation wrap.

Other products on which Cellophane could be used: (Note new products in work): Cakes, Sweet doughs, special breads.

a. Sales tools used on this call:
Samples X Prev. Disp. X Photos Park Dev.
Cons. Ads. X Trade Ads. Mkt. Sur.

b. Agreement advanced? NO

c. Did you secure order? NO

d. Service and general remarks below:

Used Lost and Found, Samples, Suggested Program.

Date of last Prod. Call	Recd. at District Office	Date Typed	Copies for
4-6-33	5-3-33	5-3-33	

CREATIVE WORK DONE

a. New items on market since last call—distribution, potential.

Result of suggestions made on last call.

1 - None.

b. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?

c. What is your plan for next call?

d. What assistance can organization give you?

2 - Indefinite.

3 - Presented samples and told about recent developments in fieldof special breads and sweet doughs, machine wrapped, M.S.T. When Dietzen expressed interest, but also concern about low prices on bread, I suggested Cellophane as a means of increasing sales on profitable items. Pointed out that the women prefer to buy special breads in Cellophane and are willing to pay a premium. They are now putting out 1 lb. sliced rye, wax wrapped, at 4¢ and Dietzen cannot see how it would be possible to get more "just for the Cellophane." I countered with the suggestion that he put out a new loaf, iced raisin, for instance, purely as a test. He is thinking in the right direction and I expect to get some action soon. May test out a special wheat loaf in the Richmond market; naturally I encouraged this for its effect upon prospects in that area.

4 - Keep hammering on fundamentals.

5 - None.

M 5128

Defendant's Exhibit No. 37

DUPONT CELLOPHANE

TRADE REPORT.

(District Office File Copy)

Salesman Stearns Date 5-22-33 No. 451

Firm Grennan Baking Co. Bus. Bakers Class 1-6

St. & No. 1250 - 17th St. City Detroit State Mich.

Controlled by: Purity, Chicago

Final Decision by (Title) Above Contacted on this call?

Buyer Newrider, P.A. here Contacted on this call? yes

Others Contacted this call (Titles) None

Type of Call—Productive Service E

Sources of Supply	Est. Cons. Bal. This Quarter	If using competitive material, state type and reasons
Us	10,000	

Items wrapped in Cellophane: Twins

Other products on which Cellophane could be used: (Note new products in work) Further cakes, sweet goods, etc.

Sales tools used on this call	b. Agreement entered?
Samples Trav. Disp. Photos Spec. Dev.	c. Did you secure orders?
Cons. Ads. Trade Ads Mkt. Rpt.	d. Service and general remarks—below

Date of Next Prod. Call	Report at District Office	Rep. Time	Copies for
5-25-33	5-24-33	5-24-33	

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1 - Sales changes are all, no new items in correct sense

2 - None.

3 - Urged change in wraps on shortcake sponges and gave full story again about necessity for best package possible in order to get utmost sales. Pointed out fallacy of use of reigelits on this package when cakes are in Cellophane. It detracts from appearance and makes the shortcake look cheap by comparison. No results. It's a matter of cost with say and they won't change.

4 - Work for adoption on 5¢ sun cakes and the soft cakes not now in Cellophane. Use A. & P. example.

5 - None.

M5019

Defendant's Exhibit No. 38

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman: Wheat — Date: 6-8-33 — No. 409

Firm: Pittsford Purity Pie Co. — Own: Bakers — Class: 2-6

St. & No.: 1420 N. Senate St. — City: Indpls. — State: Ind.

Controlled by:

Final Decision by (Title): Mr. Crawford, Receiver — Contacted on this call? yes

Buyer — Contacted on this call?

Others Contacted this call (Title):

Type of Call: Productive X — Service

Sources of Supply	Est. Cons. Rs This Quarter	If using competitive material, state type and reasons
Sylvania	300	300 P.T. third class stock buying because of price.

Items wrapped in Cellophane: Pies

RETURN C.O. SALES RECORD

Other products on which Cellophane could be used: (Note new products in work) Pies

a. Sales tools used on this call:

Samples Trav. Disp. Photos Pack. Dev.

Cons. Ads. Trade Ads. Mkt. Sur.

b. Agreement secured?

c. Did you secure order?

d. Service and general remarks—below

(d) Crawford has discontinued use of Sylphrap 3rds., on 5¢ pies. Claims increased production costs make it impossible to stand even the cost of third class stock. Is still using this material for large pies, however, claims to have no trouble obtaining thirds although recent shipments have been 450 P.T. instead of 300. Again I attempted to convince him of the value of "Cellophane" over competitive materials but without much apparent success.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies To
4-20-33	6-12-33	6-13-33	

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1-2 - None.

3 - Suggested use of M.T. on line of cakes they plan to market shortly, mostly 5¢ to 15¢ items. Pointed out usual Cellophane advantage but here again Crawford said they would use wax because it is only a "fill in" line for the summer months and they don't care particularly about building a permanent business. In refutation I pointed out the fact that Cellophane will not only stimulate sales but will reduce stale returns.

4 - Indefinite right now.

5 - None.

M5129

Defendant's Exhibit No. 39

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman: Wheat | Date: 9-25-33 | No. 691

Firm: Pittsford Purity Pie Co. | Bus.: Bakers | Class: 2-6

St. & No.: 1420 N. Senate St. | City: Indpls. | State: Ind.

Controlled by:

Final Decision by (Titles): Mr. Crawford | Contacted on this call? yes

Buyer: | Contacted on this call?

Others Contacted this call (Titles):

Type of Call—Productive: X | Service:

Sources of Supply	Est. Cons.-lbs. This Quarter	If using competitive material, state type and reasons
		RETURN C.O. SALES RECORD

Items wrapped in Cellophane: Pies

Other products on which Cellophane could be used: (Note new products in work) Pies

a. Sales tools used on this call:

Samples Trav. Disp. Photos Pack. Dev.

Cons. Ads. Trade Ads. Mkt. Sur.

b. Agreement account?

c. Did you secure order?

d. Service and general remarks—below

Crawford is a veritable chameleon as far as Cellophane or transparent wraps are concerned. Now he insists that he is discontinuing all transparent sheeting for both pies and cakes. In refuting this position I repeated on fundamentals underlying the merchandising of bakery products, emphasizing the influence of appetite and eye appeal. Used survey on Betty Crocker cakes to substantiate contentions about Cellophane; used charts to show superior protective (See Below)

Date of last Prod. Call	Dec'd at District Office	Date Typed	Class
8-14-33	9-27-33	9-28-33	

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

quality of Cellophane and used Lost and Found to show what visibility has accomplished in the field of special breads.

Crawford insists, however, that the Indianapolis market is "different" and he attributes what success they have recently experienced in cakes to a large product reasonably priced. He insists that quality is a secondary consideration, directly contrary to established opinions.

We discussed the matter at great length but Crawford remained adamant and says he will use Riegolite because of the cost differential.

M5130

Defendant's Exhibit No. 40

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman: Wheat — Date: 10-27-33 — No. 769

Firm: Holsum Baking Co. — Bus: Bakers — Class: 1-12

St. & No.: Calhoun St. — City: Ft. Wayne — State: Ind.

Controlled by: Same

Final Decision by (Titles): H.L. Somers, Pres. — Contacted on this call? yes

Buyer: Mr. Fairly — Contacted on this call? yes

Others Contacted this call (Titles):

Type of Call—Productive: X — Service:

Sources of Supply	Est. Cons.-lbs. This Quarter	If using competitive material, state type and reasons
Us	5,000	
Royal	500	RETURN C.O. SALES RECORD

Items wrapped in Cellophane: Sliced rye, Two Tone, Wheatone, White Bread.

Other products on which Cellophane could be used: (Note new products in work) Special Breads

a. Sales tools used on this call: Samples X Trav. Disp. Cons. Park. Dev. Cons. Ads. X Trade Ads. Mkt. Sur.

b. Agreement account? yes

c. Did you secure order? no

d. Service and general remarks—below

As result of our advertisement in Bakers Magazine last May Mr. Somers received letter from Takehide Co., (Mr. Shiroh Kajita), 1 Sanchome Andojibashi-Dori, Osaki, Japan, asking for samples of the bread together with samples of Cellophane wraps Mr. Somers is using on his breads. The letter expressed interest in Cellophane and complimented Mr. Somers upon his progressive steps. In return for his kindness in forwarding bread and other information Mr. Kajita had sent a beautiful

Date of last Prod. Call	Rec'd at District Office	Date Typed	Cost
9-29-33	10-30-33	10-31-33	(See Below)

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

painting which, together with the letter, is prized highly by Mr. Somers. This information undoubtedly would be interesting to our Japanese representative Mr. Matsusiki.

Incidentally Mr. Somers has discontinued Cellophane on white bread, competition, with lower price, forced him to give dealers choice of wax or Cellophane at 1/2¢ more and the dealers are preferring wax because the differential gives them more profit. I'm inclined to believe that Holsum are pushing the wax on the premise that they make more profit at 10¢ in wax than 10-1/2¢ in Cellophane.

I repeated on sweet dough items and variety breads but as yet they have taken no action. Still working on raisin bread which will be next item in Cellophane.

M 5133

Defendant's Exhibit No. 41

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman: Stearns Date: 11-15-33 No. 888

Firm: Acme Pie Co. Bus. Bakers Class 2-6

St. & No. 2286 E. Milwaukee City Detroit State Mich.

Controlled by: Ind.

Final Decision by (Titles): Mr. Lecody, Pres. Contacted on this call? yes

Buyer: Same Contacted on this call?

Others Contacted this call (Titles): Mr. Lecody, Pres.

Type of Call—Productive X Service

Source of Supply	Est. Cons. lbs. This Quarter	If using competitive material, state type and reasons
Us	500	

Items wrapped in Cellophane: Pies

Other products on which Cellophane could be used: (Note new products in work) Restaurant pies now in boxes.

a. Sales tools used on this call:

Samples X Trav. Disp. Photos Pack. Dev.

Cons. Ads. Trade Ads. X Mkt. Sur.

b. Agreement account? no

c. Did you secure order?

d. Service and general remarks—below

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
8-18-33	11-15-33	11-17-33	

CREATIVE WORK DONE

1. How items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1 - New 10¢ line of Criss-cross top pies just out on market.

2 - None. Decided not to go intosweet doughs as market too crowded.

3 - Used reprints from Bakers weekly and results of my own store surveys here to try to get them to return to 300 P.T.S. on 5¢ pies. Explained that all grocers say they sell better and it will only be short time till they will all be back in Cellophane.

He won't consider, says his sales were not hurt at all. Says he now is going to put all pies back in Glassine.

4 - Try to hold 10¢ and 15¢ business.

5 - None.

M 5023

Defendant's Exhibit No. 42

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman: Swartwout Date: 12-20-33 No. 1143

Firm: Worts Biscuit Co. Bus: Candy Baker Class: 2-6

St. & No.: 201 S. 5th St. City: Ft. Smith State: Ark.

Controlled by: Same

Final Decision by (Title): Mr. C. Worts, Jr., Pres. Contacted on this call? yes

Below Contacted on this call?

Others Contacted this call (Title)

Type of Call—Productive: X Service:

Sources of Supply	Est. Cops.—Bs. This Quarter	If using competitive material, state type and reasons
Us	100	
Brooks	200	

FILES RECORD

Items wrapped in Cellophane: 5¢ Candy bars, Saltines, Fig Newtons, Candies in bags.

Other products on which Cellophane could be used: (Note new products in work) Biscuit and cracker items and variety of candy units.

a. Sales tools used on this call:
Samples: Tray Disp. Photos: X A.P. Dev. X
Comp. Ads. Trade Ads: X Mkt. Rpt.

b. Agreement secured? NO

c. Did you secure order? yes

d. Service and general remarks—below

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies to:
8-8-33	12-26-33	12-27-33	

CREATIVE WORK DONE

1. Next Name on market since last call—distribution, potential
2. Result of suggestions made on last call
3. Creative suggestions to extend use of Cellophane, made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1-2 - None.

3 - (a) Urged use of Shell Pac idea for 5¢ line of loose candy items stressing ease of put up and attractiveness and above writing for prices.
(b) Urged bags using identification on same for line of biscuit and cracker units such as figs newtons, cake items. Pointed out value of identification of package for repeat business. Went over Merchants Biscuit success of same and Piggly Wiggly demands of same in West coast. Worts realizes this would help but claims would have to change shipping set up and etc., and also claims sells his goods to poor class trade in Ark and Okla. and would have to get more for goods being put up this way and does not believe his buying public will pay more.
(c) Presented heat sealing Cellophane for carton overwraps. Stressed its superiority for keeping goods fresh over wax or Glassine and pointed out could hand wrap or use semi automatic machines, figured costs. Worts claims costs way out of line and would not consider.

4 - Follow.

5 - None.

M 5034

Date of last Prod. Call.	Rec'd at Branch Office	Date Typed	Copies for
1st. call 9CCB	2-10-33	2-10-33	

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

1 - Mr. Knott, Pres.
2 - Bread, cakes.
3 - none
4 - First call
5 - First call

6 - (a) Urged use of M.S.T. on his special breads, such as a quality uniform sliced rye or wholewheat bread and pointed out our success in this field and sales advantages of Cellophane also stressed possibilities of machine wrapping of bread and other sweet dough items.
(b) Urged his line of cakes in Cellophane and pointed out Baker's Weekly last issue proving quality made and attractive wrapped units salvation of cake industry and pointed out consumers acceptances values of Cellophane and its protective values and urged he make 25¢ and 20¢ line of quality cakes and week-end specials and use M.T. as wrapper.
7 - (a) Above admits its appeal and keeping qualities of Cellophane and its advantages over glassine and waxed paper wraps, but claims he cannot see how he can stand these added costs because of retailing his bread at such a low price and after suggesting a 10¢ loaf that will allow him a profit, claims it would not sell as he only holds bread business because of price.
(b) Admits Bakers Weekly is correct but now only putting out 5 and 10¢ cakes and cannot stand costs. Claims as a side line, but is going to work up a new line of quality cakes, higher prices 25 and 30¢ line and will consider Cellophane as a cost in same.
8 - Keep after bread and sweet goods and check cake.
9 - Route Sheet please.

Defendant's Exhibit No. 43

EXPERIMENT X-468

MARCH 28, 1935

1-BENZ-BROWN-WENDLER
2-BEH
3-W.L.HYDEN
4-PERMANENT FILE

"CELLOPHANE" ON

POWDERED DOUGHNUTS

(Doughnut Corp. of America)

Du Pont Cellophane Co., Inc.
Sales Service Section
New York, N.Y.

M 5004

"Cellophane" on
Powdered Doughnuts

INTRODUCTION

The Doughnut Corporation of America are at the present time employing Diaphane (unsealed package) as a wrap in merchandising sugared doughnuts. They find that it is satisfactory in that it:

1. Does not allow the doughnuts to become soggy.
2. Does not allow excessive loss in moisture resulting in drying out.
3. Prevents caking and sweating of the sugar on the doughnuts.

Their chief objection to Diaphane is its lack of transparency and high luster so desirable on a food package prominently displayed.

Tests have been conducted by Mr. Malpin, Manager of the New York City plant with both L.T. and M.S.T. "Cellophane". His objections are that the L.T. allows excessive drying out of the doughnuts and M.S.T. "Cellophane" is way too moistureproof resulting in the soggy condition of the doughnuts within their sales turnover period and subsequent caking and sweating of the sugar.

OBJECTIVE

To determine the practicability of L.T. and M.S.T. "Cellophane" in merchandising sugared doughnuts.

M 5004

PROCEDURE

Tests were conducted with Diaphane, L.T. and M.S.T. "Cellophane" in an endeavor to determine the relationship between the loss in moisture, sogginess, caking of the sugar, and drying out of the doughnuts with the permeabilities of the various wraps at different stages of the experiment.

Twelve 1/2 dozen packages of doughnuts were wrapped at the Doughnut Machine Company's plant, in Diaphane, L.T. "Cellophane" and M.S.T. "Cellophane". Half of each were sealed - heat being employed for the M.S.T. "Cellophane" and "Scotch Tape" for the Diaphane and the L.T. stock.

All units were carefully weighed and left exposed to room temperature and humidity. Successive weighings were made at the end of 24, 48 and 72 hours.

Original permeabilities were made on all unused wrappers. Subsequent permeabilities were run on the used wrappers at the end of 24, 48 and 72 hours.

Condition of the doughnuts was determined at the end of 24, 48 and 72 hours.

A record of the atmospheric conditions to which the test packages were exposed were taken three times a day for the duration of the test.

M 5004

RESULTS

TABLE I

Average Per Cent Loss in Weight

Time in Hours	Diaphane		L.T. "Cellophane"		M.S.T. "Cellophane"	
	Sealed	Unsealed	Sealed	Unsealed	Sealed	Unsealed
24	.90	.80	1.02	1.15	.11	.13
48	1.85	1.80	2.55	2.70	.21	.49
72	3.01	2.95	4.30	4.40	.34	.66

TABLE II

Permeabilities

	Diaphane	L.T. "Cellophane"	M.S.T. "Cellophane"
Unused	4,670	3,800	27.0
Used			
24 hrs.	4,225	3,995	332.0
48 "	4,010	4,140	355.0
72 "	4,050	4,10[illegible]	600.0

TABLE III

Condition of Doughnuts

Time in Hours	Diaphane	L.T. "Cellophane"	M.S.T. "Cellophane"
24	10	10	11
48	9	8	12
72	8	6	14

M 5004

RESULTS (Continued)

Code

14 - Distinct sweating of sugar - distinctly soggy.

12 - Slight caking of sugar - slightly soggy.

10 - Perfect condition.

8 - Slightly dry.

6 - Definitely Dry - Difficult to eat.

TABLE IV

Atmospheric Conditions

Date	Time of Day					
	9:00 A.M.		1:00 P.M.		5:00 P.M.	
	Temp.	R.H.	Temp.	R.H.	Temp.	R.H.
3/11	-	-	75°	40%	-	-
3/12	75°	37%	70°	38%	71°	29%
3/13	71°	23%	72°	24%	74°	26%
3/14	67°	30%	72°	24%	71°	23%
3/15	70°	36%	75°	24%	-	-

M 5004

DISCUSSION

Despite the lower permeabilities of L.T. "Cellophane" at the start of the test the loss in moisture was approximately 48% more than the doughnuts overwrapped in Diaphane. On none of these packages was there any indication of caking or sweating of the sugar.

Despite the type wrap all doughnuts were in an edible condition at the end of 48 hours while only those in Diaphane were considered in a satisfactory edible condition at the end of 72 hours.

The permeabilities for Diaphane and L.T. "Cellophane" are not in agreement with the percent loss in weight due to evaporation of moisture. There is a definite building up of the resistance to penetration of moisture in the Diaphane on the used wrappers. These differences in permeabilities as indicated in Table II however, are not great, considering their original permeability.

A processed Cellophane having a permeability of 2500 would possibly show interesting results. Allowing for an increase in permeability of the used wrapper from 2500 to 3300 a protection factor slightly superior to that obtained with Diaphane would be secured. It probably would allow approximately 2% loss in weight due to evaporation of moisture from the doughnuts over a 72 hour test period at room conditions.

M 5004

DISCUSSION (Continued)

This loss in moisture should eliminate any possibility of the sugar caking or sweating and the doughnuts becoming either soggy or dried out.

CONCLUSION

L.T. and M.S.T. "Cellophane" are not as suitable as Diaphane for merchandising doughnuts and in keeping them in a satisfactory salable condition for a 72 hour period.

PREPARED BY _____
R.C. Schilly
Sales Service Section

APPROVED BY _____
A.F. Wendler, Manager
Sales Service Section

RCS:EA

M 5004

Defendant's Exhibit No. 46

CC: C.F.Brown-O.F.Benz
T.L.Hines-J.E.Hart-L.A.Yerke
A.F.Wendler

DU PONT CELLOPHANE COMPANY, INC.

SALES SERVICE SECTION

RETURN TO
SALES SERVICE LABORATORY
NEW YORK OFFICE

May 15, 1936

Subject: EXPERIMENT #771
"CELLOPHANE" vs. WAXED PAPER
ON WHITE BREAD

OBJECT

The evaluation of M.S.T. "Cellophane" and waxed paper as protective wraps on bread.

SOURCE OF MATERIAL

30 loaves of white bread from Fischer Baking Company, Newark, New Jersey, baked, cooled, wrapped and delivered to the laboratory on the same day.

PROCEDURE

Description of test units; 6 loaves of each of the following:

1. Unwrapped.
2. M.S.T. "Cellophane" wrap, unsliced.
3. M.S.T. "Cellophane" wrap, sliced.
4. Waxed paper wrap, unsliced.
5. Waxed paper wrap, sliced.

All units stored at room conditions of temperature and humidity.

Observations and taste tests by 3 individuals were made at the end of 24, 48 and 72 hours for:

1. Odor of crust.
2. Taste of crust.
3. Condition of crust (soft or hard).
4. Condensation of moisture on inside of wrapper.
5. Odor inside of bread.
6. Taste inside of bread.
7. Mold.

M 5222 O

80

DETAILS OF RESULTS

TABLE I

AVERAGE LOSS IN GRAMS OF MOISTURE IN BREAD STORED AT ROOM CONDITIONS

AFTER	24 HOURS	48 HOURS	72 HOURS
Unwrapped	17.16	35.44	46.76
Waxed Paper Wrap*			
A. Unsliced Bread	1.03	3.21	4.91
B. Sliced Bread	1.08	2.78	4.33
M.S.T. "Cellophane"			
A. Unsliced Bread	0.40	0.58	0.96
B. Sliced Bread	0.41	0.82	1.22

*Double wrap by means of an insert which covers all the loaf, except the ends.

PERMEABILITIES OF USED WRAPS

	L.P.V.	P.V.C.
Waxed Paper		
A. Outside Wrap	78	5489
B. Inside Wrap	425	6967
C. Double	65	668
M.S.T. "Cellophane"	80	181

TABLE II

QUALITY OF BREAD

	HOURS	UNWRAPPED	WAXED PAPER UNSLICED	WAXED PAPER SLICED	M.S.T. "CELLOPHANE" UNSLICED	M.S.T. "CELLOPHANE" SLICED
Odor of Crust	24	6	10	10	8	7
	48	4	10	10	6	6
	72	4	10	10	5	5
Taste of Crust	24	8	10	10	7½	9
	48	8	10	10	7	8½
	72	8	10	10	7	8
Condition of crust	24	6	10½	10	11	11
	48	3	10	9	10½	11½
	72	1	10	8	10	10½

M 5222

Table II.
continued

	HOURS	UNWRAPPED	WAXED PAPER UNSLICED	WAXED PAPER SLICED	M.S.T. "CELLOPHANE" UNSLICED	M.S.T. "CELLOPHANE" SLICED
Condensation	24	10	10	10	10	10
	48	10	10	10	10	10
	72	10	10	10	10	10
Odor Inside Bread	24	9	10	10	8	10
	48	9	10	9	74	10
	72	9	10	9	7	84
Taste Inside Bread	24	9	10	10	9	84
	48	9	10	10	8	9
	72	9	10	10	6	9
Mould	24	10	10	10	10	10
	48	10	10	10	10	10
	72	10	10	10	10	10

KEY TO RATINGS*

11 - Too soggy
10 - Normal
8 - Fair
6 - Border line - just passable.

*Ratings in table are averages of 5 tests, each by a different individual.

The preceding figures indicate:

1. Waxed paper wrap gives bread 10 times more protection than an unwrapped loaf.

2. M.S.T. "Cellophane" is 4 times as effective as waxed paper in preventing moisture loss.

3. I.P.V.'s for double thickness waxed papers were quite good although the corresponding P.V.C.'s were 5 times poorer than those for M.S.T. "Cellophane".

4. A slight off-odor was noted within the wrap of the M.S.T. "Cellophane". This did not, however, affect the product itself.

5. In one loaf wrapped in M.S.T. "Cellophane" the taste of bread in the inside of the loaf was objectionable - a definite fermented taste being apparent.

6. In general, the taste and odor inside the bread was comparable for both wraps (excepting in the one case mentioned in 5).

M 5222

7. Low ratings given on odor of crust of unwrapped bread are due to the absence of normal bread odor, rather than to presence of any objectionable acquired odor.

8. No condensation was found on any of the wraps.

9. No mould formation was found on any of the loaves

CONCLUSIONS

These tests indicate that:

1. M.S.T. "Cellophane" on white bread affords more protection than waxed paper from a moisture loss standpoint.

2. Waxed paper (double wrap) results in slightly higher quality ratings given to bread than were obtained with M.S.T. "Cellophane".

BY C. L. Blair,
Sales Service Section.

APPROVED A. F. Wendler, Manager,
Sales Service Section.

M 5222

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Defendant's Exhibit No. 47

EXPERIMENT 8-12-A

May 27, 1938

Confidential

CC: C. F. Brown - O. F. Benz
T. L. Hines - J. E. Hatt - L. A. Yerkes
C. M. Switzer
H. O. Thayer
→ A. F. Wendler

PROTECTION AFFORDED CAKE PRODUCTS BY "SCHLOPHANE"

PART I

WARD BAKING COMPANY

E. I. du Pont de Nemours and Company,
"Cellophane" Division,
Sales Service Section,
Wilmington, Delaware.

M 5233

SUBJECT

PROTECTION AFFORDED CAKE PRODUCTS
BY "CELLOPHANE"

PART I - WARD BAKING COMPANY

OBJECT

To evaluate various types of Moistureproof "Cellophane" as protective wraps on cake products.

REASON

Complaint from the Ward Baking Company that MST "Cellophane" is not rendering adequate protection to their cake products during the winter season and is not comparable in this respect to Riegel Paper Company's waxed glassine.

GENERAL

The Ward Baking Company, as a result of complaints from their production department, that cake products in MST "Cellophane" were not remaining as fresh as those wrapped in a waxed glassine from the Riegel Paper Co., had their laboratory conduct a series of tests over a period of several weeks to compare the protection afforded cake products by MSTT "Cellophane" and waxed glassine. Dr. Hoffman's results verified the experience of their production department on the superiority of waxed glassine from Riegel and the matter was called to the attention of our Sales Division early in December, 1937.

As a result of a visit to their New York City offices December 16, the following information was obtained:

1. Over a seven-day test period waxed glassine renders double the protection of MSTT "Cellophane" on pound cake, cup cakes, and banana twins.
2. That the above results were consistently the same in all tests.

M 5233

3. Staling of the cake products as reported by the production department appeared as drying and cracking of the icings, shrinkage and hardening of the cake.
4. Original moistureproofness of the film was usually excellent, as determined by their method; but occasionally showed wide variations.
5. They believe trouble to be the result of action of butter fat in the icings and cake dough on the coatings causing a bad loss in original moistureproofness.
6. Unless problem is solved it will be necessary for them to adopt waxed glassine as made by Riegel.

In view of the above, it was decided to run a series of tests employing various types of moistureproof "Cellophane", using Riegel's waxed glassine as a basis of comparison.

PROCEDURE

For purposes of simplification and continuity, each test will be reported on and discussed separately. All test films were in sheet form 18" x 16". These were sent to Dr. Hoffman of the Ward Baking Company in New York City for wrapping of pound cake, cup cakes and banana twins. Two sets of packages were made up; one being immediately expressed to the Sales Service laboratory in Wilmington, the other being retained by Dr. Hoffman for their own weight loss evaluations. To compensate for the period in transit, our laboratory evaluations were run for only four days. Ward Baking Company's results are reported for a seven-day period.

DETAILS OF EXPERIMENT

TEST I

Object - To verify statements made by Ward Baking Co. on current production in their plants.

Films Tested - MOIST "Cellophane" - from Ward Plant - no order

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numbers available. Riegel's waxed glassine.

Test Period - 7 days at room conditions - Ward Laboratories.

Results

	P.V.U.→				% LOSS IN WEIGHT		
Film	IPV's	Pound Cake	Cup Cake	Banana Twins	Pound Cake	Cup Cake	Banana Twins
MSYT	127	790	818	277	3.14	3.66	4.09
Waxed Glassine	30	513	586	166	1.52	1.40	2.62

The initial permeability of the MSYT "Cellophane" used is entirely out of line for normal production. The protection offered by MSYT is approximately one-half that obtained with waxed glassine. P.V.U.'s do not entirely tie in with the weight loss figures; however, those for MSYT removed from pound cake and cup cake are definitely on the high side. No explanation can be given for the low P.V.U. of MSYT removed from banana twins considering the percent loss in weight as reported.

CONCLUSIONS

The results of test one confirm Ward's original statement that heat sealing "Cellophane" is only half as good as Riegel's glassine in protection to cake products.

TEST II

Object - To evaluate Flycol softened production.

Films Tested - Sprmanc. Production MSXT-M

Waxed Paper.

Test Period - 4 days at room condition - Sales Service Laboratory

" " " " " - Ward Baking "

Results

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Film	I.P.V.	P.V.U. Pound Cake	P.V.U. Cup Cake	P.V.U. Banana Twins	Du Pont % LOSE IN WEIGHT Pound Cake	Du Pont % LOSE IN WEIGHT Cup Cake	Du Pont % LOSE IN WEIGHT Banana Twins
MSXT-H Spruance	29	970	309	256	3.07	0.35	3.75
Waxed Glassine	30	397	395	191	1.72	1.90	1.35
					Ward Baking - 7 days		
MSXT-H Spruance	29	-	-	-	3.45	1.60	3.67
Waxed Glassine	30	-	-	-	1.54	1.05	1.26

Despite the marked improvement in I.P.V.'s of the MSXT over the MSYT in Test I the same relation exists for protection afforded to pound cake and banana twins. Protection to cup cakes, however, did show a marked improvement.

Strangely enough, the P.V.U.'s showed excessive breakdown in only one instance - that on wrappers from golden pound cake. No doubt the type and degree of contact of the film with the cake or icing largely determined the degree of coating breakdown. As this condition would be more uniform on pound cake in view of its shape and size, P.V.U. results on wraps from this product should be more reliable.

CONCLUSIONS

Except for results on cup cake waxed glassine still shows a marked superiority in protection to cake products over MSXT-H production from the Spruance Plant.

TEST III

Object - To evaluate three different types of production from Buffalo.

Films Tested - MT-83 high solids - Buffalo production.
MSXT-G - " "
MAYT - " "
Waxed Glassine - Kimpet Paper Company.

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Test Period - 4 days at room conditions - Sales Service Laboratory.
" " " " " - Ward Baking Co. "

Results -

Film	P.V.U. → I.P.V.	Pound Cake	Cup Cake	Banana Twins	% Loss In Weight In Pont - 4 days Pound Cake	Cup Cake	Banana Twins.
MT-83 (high solids)	10	416	398	506	2.80	1.85	3.05
MSXT-C	19	364	428	358	2.75	1.80	2.85
MAYT	30	457	590	911	3.35	1.75	3.05
Waxed Glassine	30	181	130	177	1.50	1.10	1.35
					Ward Baking - 7 days		
MT-83 (high solids)	10	-	-	-	1.86	2.22	4.30
MSXT-C	19	-	-	-	1.55	2.35	3.80
MAYT	30	-	-	-	2.05	2.55	4.50
Waxed Glassine	30	-	-	-	0.54	1.09	1.28

Except for the P.V.U.s of MAYT, none of the wrappers showed as great a breakdown as on previous tests. Protection on pound cake and cup cakes for MT-83 high solids and MSXT-C, both Buffalo production show an improvement. On banana twins protection by "Cellophane" still shows unfavorable results. It is quite possible that the banana flavoring may be one of the prime factors that is causing this continued poor protection.

CONCLUSIONS - Improvements are shown in protection afforded pound cake and cup cakes by MT-83 (high solids) and MSXT-C. No improvement is indicated on banana twins.

General results still show a superiority in protection for waxed glassine.

TEST IV

Object - To determine the protection efficiency of glycerol softened production.

Films Tested - MSXT-G (glycerol) - Buffalo Production.

Films Tested (continued)

Waxed Glassine - Riegel Paper Company.

Test Period - 4 days - 17% R. H. - Sales Service Laboratory.

7 days - room conditions - Ward Baking Co. Laboratory.

Results

Film	MVT	P.V.C. Pound Cake	P.V.C. Cup Cake	P.V.C. Banana Twins	% Loss in Weight Du Pont - 4 days Pound Cake	Cup Cake	Banana Twins
MST-G (Buffalo)	17	555	522	666	3.95	2.05	3.50
Waxed Glassine	30	209	306	165	4.40	2.90	2.00
					Ward Baking - 7 days		
MST-G (Buffalo)	17	-	-	-	1.54	2.13	2.05
Waxed Glassine	30	-	-	-	1.05	1.42	1.57

Although the P.V.C.'s are not in alignment with the protection afforded, glycerol softened MST-G, Buffalo production rendered protection to pound cake and cup cakes equal to waxed glassine. Improvement in protection is also shown for banana twins, although waxed glassine is still superior.

CONCLUSIONS

Glycerol softened MST-G, Buffalo production indicates possibilities of giving protection to pound cake and cup cakes equal to waxed glassine.

TEST V

Object - The effect of increased wax content in H formula with Plycol softened production.

Films Tested - MSXT-H 3% wax - Buffalo Plant.
MSXT-H 4% " - " "
MSXT-H 5% " " "
MST-G - " "
Waxed Glassine - Riegel Paper Company

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Test Period - 4 days - Room conditions - Sales Service Laboratory.
7 " " " - Ward Baking "

Results

Film	I.P.V.	P.V.U. → Pound Cake	Cup Cake	Banana Twins	% Loss in Weight Du Pont - 4 days Pound Cake	Cup Cake	Banana Twins
MEXT-H 3% wax	23	617	430	308	1.58	1.23	3.45
MEXT-H 4% "	30	646	645	358	1.29	1.49	3.35
MEXT-H 5% "	29	525	475	383	1.26	1.07	3.13
MST-G	-	995	-	-	1.48	-	-
Waxed Glassine	-	651	374	712	1.13	2.55	1.18
					Ward Baking - 7 days		
MEXT-H 3% wax	23	-	-	-	1.90	1.43	3.78
MEXT-H 4% "	30	-	-	-	1.59	1.60	4.50
MEXT-H 5% "	29	-	-	-	1.41	1.35	3.57
MST-G	-	-	-	-	2.20	-	-
Waxed Glassine	-	-	-	-	0.98	1.18	1.36

The results on 3, 4 and 5 percent wax in H coating formula on Flycel softened production indicate a preference for 3% wax from a protection standpoint. The results with this film compare favorably with protection afforded by waxed glassine on pound cake and cup cakes. On banana twins, however, the protection afforded by any type of "Cellophane" was not satisfactory and could not compare with waxed glassine.

It is of interest to note that glycerol softened MST-G, from the same lot as used in Test IV, gave results only comparable to MEXT-H containing 3% wax, which results were not equal to waxed glassine. No explanation can be given on the reversal of these results.

P.V.U.'s are again on the high side for pound cake and cup cakes and do not entirely tie in with the weight loss data. P.V.U.'s on wrappers from banana twins are entirely out of line with the weight loss data.

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CONCLUSIONS

Rechecking MST-G production resulted in unfavorable results - the reverse of those obtained in Test IV.

MSXT-H production containing 5% wax renders protection to pound and cup cakes comparable to waxed glassine.

All types of "Cellophane" on banana twins still show unfavorable results.

TEST VI

Object - The effect of increased wax content of H formula coated on glycerol softened production.

Films Tested - MST-H - 3% wax Buffalo Plant.
" 4% " " "
" 5% " " "
Waxed Glassine Riegel Paper Co.

Test Period - 4 days - 17% R.H. conditions - Sales Service Laboratory.

Results

	P.V.U. →				% Loss in Weight		
Films	IPV	Pound Cake	Cup Cake	Banana Twins	Pound Cake	Cup Cake	Banana Twins
MST-H - 3% wax	19	1767	407	476	3.05	2.9	5.5
MST-H - 4% "	14	693	644	442	1.95	2.8	4.7
" " - 5% "	9	701	501	485	2.30	2.95	5.7
Waxed Glassine	-	260	317	343	2.40	3.70	2.45

The reason for running these tests at 17% R.H. was because of the high humidity at room conditions during the period.

Best results on pound and cup cakes were obtained with MST-H containing 4% wax. This film gave results superior to waxed glassine from a protection standpoint. "Cellophane" on banana twins still showed unsatisfactory results.

CONCLUSIONS

MST-H coating formula containing 4 percent wax and used on

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glycerol softened film gives satisfactory protection to pound and cup cakes when exposed to low humidity.

Protection afforded to banana twins is unsatisfactory.

No conclusions from the P.V.U.'s obtained in comparing with the weight loss data can be drawn.

SUMMARY

A series of tests have been conducted on three types of cake products made by the Ward Baking Company employing the following types of films:

MSYT	- Ward			
MSXT-H	- Sprueance			
MSXT-G	- Buffalo			
MT-SS high sol-ids	-			
MAYT	- Buffalo			
MST-G	-	"		
MSXT-H	- 3%	wax	-	Buffalo
"	- 4%	"	-	"
"	- 5%	"	-	"
MST-H	- 3%	"	-	"
"	- 4%	"	-	"
"	- 5%	"	-	"

In every test waxed glassine made by Riegel Paper Co. was included as a basis of comparison with weight loss values obtained by both the Sales Service and Ward Baking laboratories. These results, together with I.P.V.'s and P.V.U.'s are included in the body of this report.

There appears to be no basis of comparison between the P.V.U. values obtained and the protection against loss in weight of the cake products; this condition undoubtedly the result of variations between packages of the amount and duration of contact of the wrapper surface with the cake product. Breakdown in many instances is extreme.

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MST-G, MSXT-H 5% wax and MST-H 4% wax, indicated results comparable to waxed glassine on pound cake and cup cakes. However, attempts at duplicating the results obtained with MST-G were unsuccessful.

No "Cellophane" tested, possibly with the exception of MST-G gave satisfactory protection to banana twins. The flavoring used in the cream filling may be responsible for these results, although invariably the P.V.U.'s on wrappers taken from this product were lower than for those removed from pound and cup cakes.

GENERAL CONCLUSIONS

As a result of these tests indications are that:

1. Waxed glassine from the Riegel Paper Company renders better all around protection on cake products than any type of "Cellophane" now produced.
2. MST-G "Cellophane" is the only film regularly produced that approaches waxed glassine in protection to cake products and this showed variable results.
3. The use of four and five percent wax in H coating formula on glycerol and Plycol softened production gave protection to pound and cup cakes comparable to waxed glassine.
4. Further work will be conducted to obtain the most satisfactory type of film for this purpose. Following this the existing specifications for this type of trade will be changed to insure maximum protection to the wrapped products.

R. C. Schilly,
Sales Service Section.

RCS:SS

APPROVED

A. F. Wendler, Manager,
Sales Service Section.

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Defendant's Exhibit No. 48

EXPERIMENT 9-2

January 11, 1939

CC: C. F. BROWN-O. F. BENZ
T. L. HINES-J. E. HATT-L. A. YERKES
C. M. SWITZER
H. O. THAYER
A. F. WENDLER

2600

IMPROVED PROTECTION TO BAKERY PRODUCTS

"CELLOPHANE" DIVISION
E. I. DU PONT DE NEMOURS & CO., INC.
Sales Service Section
Wilmington, Delaware.

M 5234

SUBJECT

IMPROVED PROTECTION TO BAKERY PRODUCTS

OBJECT

The evaluation of eight films, prepared by the Technical Division for improved protection to cake products.

REASON

The Ward Baking Company's statement that current production MSYT does not render adequate protection to their bakery product: and definitely is not equal to Regal's waxed glassine.

GENERAL

During the period January to May 1938 a series of tests run with the cooperation of the Ward Baking Company, in which many variations in coating formula, types of coatings, and softeners were employed, indicated that MST "Cellophane" in its present form would not render protection equal to Regular waxed glassine. This work was covered in the following reports:

#8-1&-A	Issued	5/27/38
#8-1&-B	"	5/31/38
#8-1&-C	"	6/22/38

Since then other baking concerns have complained of poor protection; notably, Grennan Baking Co., Jamaica, L. I., Loose Wiles Biscuit Co., Long Island City, and National Biscuit Co., New York City.

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The problem was referred to the Technical Division. In November 1938 eight films were submitted for field testing. It was decided before submitting films to the Ward Baking Co. to check the protection performance of these films on pound cake secured from a local bakery.

PART I

Films Tested

Code	Sample #	CSW#	Type
A	129	4439-B	Standard MST-H 100% coating thickness
B	130	4439-C	" " 125% " "
C	131	4439-D	" " 150% " "
D	132	4440-A	18% solids MST-H 100% coating thickness
E	133	4440-B	" " " 125% " "
F	134	4440-C	" " " 150% " "
G	135	4462	Chlorinated rubber (Tornesite) composition
H	136	4461-B	Pliolite composition
I	-	-	Regal's Waxed Glassine

PROCEDURE

Sufficient pound cake was purchased from a local baker to allow twelve slices to be individually wrapped in each type of film. These slices ranged in weight from 70 to 104 grams.

To eliminate excessive handling in wrapping and sealing, small flat bags were prefabricated on a mandrel using a confectioner's fold the long way and the end flaps sealed tightly with Scotch Cellulose Tape. The cake slices were carefully inserted in the bags and sealed with Scotch tape.

After weighing, the packages were exposed to room conditions for seven days with reweighings at the end of 1, 2, 4 and 7 days for determining the loss in moisture.

At the end of every 24 hours the cake units were turned over to allow both flat surfaces to be in intimate contact with the cake at least during 50% of the test period.

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Three wrappers of each type of film were removed at the end of 1, 2, 4 and 7 days for PVU's.

DETAILS OF RESULTS

Permeability data as submitted by the Technical Division will be found in Table I attached.

Except for films G and H (chlorinated rubber and Pliolite coated films) the initial permeabilities of all test films were very good -- all being well within the range allowable for AAA grade permeability.

In Table II attached will be found the percent loss in weight and permeability data.

The four best films from a protection standpoint in order of their superiority are:

1. Regal's waxed glassine
2. Pliolite coated film
3. 18% solids - 150% coating thickness MST-H
4. Standard MST-H 150% coating thickness.

There does not appear to be any marked superiority of 18% solids MST-H formula over the standard MST-H formula. The improvement in protection appears to come from the increased coating thickness.

The PVU'S vary considerably and do not tie in with the loss in weight data. One notable example is film "H" coated with Pliolite composition. Although the breakdown in moistureproofness was considerably higher than for some of the other test films it gave the best protection. This same film, where in contact with the cake, showed a blistered condition due, apparently, to the poor anchorage

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of the coating originally reported by the Technical Division. 18% solids MST-H - 150% coating thickness showed the least breakdown in moistureproofness of any test film. Regal's waxed glassine was outstanding in this respect.

SUMMARY

1. High solids MST-H formula appears to have no outstanding improvement in protection over standard MST-H formula.
2. 150% coating thickness is definitely superior to standard coating thickness.
3. Film coated with Pliolite composition offers exceptionally good protection to cake products.
4. PVU's are not to be regarded as completely reliable, insofar as protection against loss in moisture is concerned.
5. The three films for testing at the Ward Baking Co. are:

   Standard MST-H - 150% coating thickness

   18% solids MST-H - 150% coating "

   Pliolite composition coated film

PART II

PROCEDURE

18 pound cakes averaging 290 grams per cake were wrapped in each of the following films at the Ward Baking Company's plant in New York City:

Code C - Standard MST-H - 150% coating thickness
" F - 18% solids " " " "
" H - Pliolite composition
" I - Regal's waxed glassine

Six of each were left with the Ward Technical staff, who also included six wrapped in current MSYT "Cellophane" from their plant.

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In wrapping with the waxed glassine a confectioner's fold was made on the bottom, the ends folded under and held in place by a paper band. All "Cellophane" wrapped units were heat-sealed. With film "H" the temperature of the hot plate was reduced to approximately 150 degrees C. At this temperature the film stuck badly on the hot plate, necessitating very careful handling to insure a satisfactory wrap.

All cakes were weighed, shortly after wrapping, in the Ward laboratory, where they were exposed for 1½ days. The cakes were then packed and brought to the Sales Service laboratory and weighed after 2, 4 and 7 days from time of wrapping.

DETAILS OF RESULTS

Percent loss in weight and permeability data will be found in Table III attached.

The percent loss in weight data clearly shows 150% coating thickness, either formula, to be equal in protection to waxed glassine.

Pliolite coated film, although showing a badly blistered surface, offered almost twice the protection of the other test films.

The results submitted by the Ward Baking Company were equally as promising, particularly when compared with the results obtained from current MSYT in their plant.

Permeability data do not appear to be particularly reliable, as Pliolite coated film with a bad breakdown gave the best protection. Waxed glassine showed very little breakdown in moistureproofness.

CONCLUSIONS

As a result of these tests indications are that improved protection to cake products can be secured by:

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1. Standard MST-H with 150% coating thickness.

2. Pliolite composition coated films.

With the latter, protection over and above any wrap for bakery products now on the market, is attainable. The Pliolite coated films used in these tests only had a coating thickness of 80%. It would seem desirable that further work be done with the composition in securing a satisfactory anchorage and producing film with coating thicknesses of 100, 125 and 150 percents.

R C Schilly 1/4

R. C. Schilly,
Sales Service Section.

Approved A F Wendler

A. F. Wendler, Manager,
Sales Service Section.

Note: A further report will be received from the Ward Baking Co. employing film C, F. H and I on pound cake slices, iced cup cakes and pineapple twists.

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TABLE I

Code	CSW-No.	Blush	Slip	Å Coating Thickness	IPV	PVC	PVF	Heat-Seal
A	4439-B	2+	1	106	13	75	58	115
B	4439-C	2+	1	126	7	54	39	155
C	4439-D	2+	1	154	10	65	58	-
D	4440-A	2+	1+	115	11	60	37	152
E	4440-B	2+	1+	122	11	53	41	156
F	4440-C	2+	1	137	8	63	44	170
G	4462	2+	2	84	65	133	95	120
H	4461-B	2+	1	80	79	136	153	60

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TABLE II

Results of First Laboratory Test

Pound Cake Slices

Code	Type	Percent Loss in Weight 1 day	2 days	4 days	7 days
A	Stand. MST-H-100% coating	.09	.41	1.27	2.55
B	" " 125% "	.05	.25	0.95	2.31
C	" " 150% "	.07	.24	0.80	1.88
D	18% solid MST-H 100% "	.09	.36	1.08	2.39
E	" " " 125% "	.09	.36	1.10	2.75
F	" " " 150% "	.05	.15	0.62	1.50
G	Chlorinated Rubber	.11	.25	0.69	2.07
H	Pliolite composition	.08	.16	0.56	1.29
I	Regal's Waxed Glassine	.02	.12	0.39	1.00

Permeabilities

Code	IPV's	PVM's	PVU's 1 Day	2 Days	4 Days	7 Days
A	15	30	666	470	950	659
B	6	25	453	517	547	455
C	8	12	224	517	443	478
D	7	46	441	551	770	575
E	8	21	292	494	460	638
F	6	17	193	176	259	267
G	78	70	352	1129	725	1080
H	81	110	281	538	616	706
I	107	62	137	164	63	116

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TABLE III

Test on Ward Pound Cake

Code	Type	Percent Loss in Weight Sales Service Lab. 2 Days	4 Days	7 Days	Ward Results 7 Days
C	Stand. MST-H-150% Coating	.17	.56	1.05	0.7
F	18% Solids MST-H 150% Coating	.19	.50	0.91	0.9
H	Pliolite composition	.12	.27	0.48	0.5
I	Regal's waxed glassine	.23	.54	0.95	0.8
	Reg. MSYT-(Ward Plant)	-	-	-	2.1

Permeabilities

	IPV's	PVU's 2 Days	4 Days	7 Days	
C	10	533	624	669	-
F	8	382	461	436	-
H	79	859	590	419	-
I	62	75	157	50	-

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Defendant's Exhibit No. 49

EXPERIMENT #11-3

January 16, 1941

CC: F. Brown
C. Jorgensen-H. J. Crowley, N. Y.
W. G. Hunter

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CONFIDENTIAL

RESEARCH & PRODUCTION DATA
NOT FOR GENERAL DISTRIBUTION

IMPROVED PROTECTION TO CAKE PRODUCTS

"CELLOPHANE" DIVISION,
E. I. DU PONT DE NEMOURS & COMPANY,
Sales Service Section,
Wilmington, Delaware.

M 5235

SUBJECT:

IMPROVED PROTECTION TO CAKE PRODUCTS

OBJECT:

The evaluation of new films for improved protection to cake products.

GENERAL:

Considerable time and effort have been spent during the past two years towards the production of a heat-sealing film that would offer greater protection to cake products over a seven-day turn-over period. While many formulas were tested, the du Pont Company finally adopted #300 MST-54 as the "Cellophane" that gave this improvement in protection without presenting any problems to converters or bakers from standpoints of printing, converting, machine wrapping and heat-sealing.

This report summarized the results obtained by the Ward Baking and Du Pont Laboratories on pound cake wrapped at the New York City plant of the Ward Baking Company. To simplify this report, all data pertaining to experimental films other than MST-54 are not included.

PROCEDURE:

Pound cake was machine wrapped and sliced cake was hand wrapped at the New York plant of the Ward Baking Company. In every test a duplicate set of samples was left with Dr. Hoffman

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of the Ward Baking Company for protection tests in their laboratory. The remaining samples were returned to our Technical Service laboratory, where weight loss data was secured over a seven-day period of exposure to 17% Relative Humidity.

In addition to protection tests described above, performance efficiency on wrapping, printing and converting machines was determined for all test films. This factor of machine performance is vitally important when considering any change in "Cellophane" formulas.

DETAILS OF RESULTS:

Weight loss data will be found in the attached tabulation.

It will be noted that MST-54 was used in all comparisons. Except for four results, this film offered protection to cake superior to that secured by the other films tested.

Based on calculations made only when films were compared in the same test, the following percents improvement in protection afforded by MST-54 over regular MST, competitive transparent sheeting and Regal's waxed glassine, are obtained:

Regular MST "Cellophane"	34.3%
Competitive transparent film	25.6
Regal's waxed glassine	5.0

CONCLUSIONS:

As a result of this work, the du Pont Company has offered to the Ward Baking Company a moistureproof heat-sealing film, known as MST-54, capable of rendering superior protection to their cake products and having excellent wrapping machine performance efficiency.

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Work on the problem of improved protection continues; and there is every reason to believe that further improvements in preventing loss in weight of cake products will be had as this work progresses.

By R. C. Schilly
R. C. Schilly,
SALES SERVICE SECTION.

APPROVED: W. G. Hunter
W. G. Hunter, Manager,
SALES SERVICE SECTION.

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RCS:SS

WEIGHT LOSS DATA

PERCENT LOSS IN WEIGHT AFTER 7 DAYS AT LOW HUMIDITY

Test #	Laboratory	Product	Regular MST	MST-5A	Regular Waxed Glassine	MT Competitive
1	Du Pont	Pound cake slices	2.55	1.88	1.00	-
2	Ward	" " "	3.72	2.80	1.90	-
3	Du Pont	" " full size	2.30	1.03	0.93	-
4	Ward	" " " "	2.10	0.70	0.80	-
5	"	Cup Cakes	2.26	1.30	1.78	-
6	Du Pont	Pound Cake Full Size	1.29	.84	-	-
7.	" "	" " " "	-	.52	.73	.97
8	" "	" " " "	1.55	.93	-	-
9	" "	" " " "	-	.89	-	-
10	" "	" " " "	-	.81	-	1.53
11	" "	" " " "	-	1.27	-	-
12	" "	" " " "	-	.91	1.35	1.29
13	" "	" " " "	-	.73	-	-
14	Ward	" " " "	-	.56	-	1.35
15	"	" " " "	-	.84	1.21	.95
16	"	" " " "	-	.59	-	-
17	"	" " " "	1.35	.99	-	-
18	"	" " " "	-	.52	.55	.79
19	"	" " Slices	-	2.80	1.90	-
20	"	" " "	5.17	4.21	5.52	4.97
21	Du Pont	" " "	5.82	4.20	-	-
22	" "	" " "	6.75	4.35	4.88	-
23	" "	" " "	2.42	1.92	-	-
24	" "	" " "	4.69	3.55	3.94	3.78

4266

M5235

109

Defendant's Exhibit No. 50

*and 40% Saving in your wrapping costs means . . . INCREASED PROFITS!

You can't get around the simple fact that Diafane will save 40% of your cake wrapping costs when compared with transparent cellulose (32% saving on bread).

And you can't ignore the fact that hundreds of bakers have already changed to Diafane and are pocketing this saving as additional profit, or using it elsewhere in their business.

Diafane's excellent transparency, together with its [illegible]proof, lacquered surface, will give any bakery product plenty of "[illegible]". At the same time it provides perfect moisture protection. [illegible] by hand or machine, seals with heat or glue, costs little [illegible] serves 40%.

It's just a matter of simple arithmetic. The only [illegible] haven't you given it a trial? Write for liberal trial samples [illegible]

RIEGEL PAPER CORPORATION, 342 MADISON [illegible] YORK

DIAFANE

M 5236

Defendant's Exhibit No. 51

Experiment 9-2-E

CONFIDENTIAL

May 3, 1939

O.F.Benz - C.F.Brown
C.M.Switzer - T.D.Hines - J.E.Hatt - L.A.Yerkes
H.O.Thayer - Buffalo
A.F.Wendler

2618

IMPROVED PROTECTION

TO

BISCUITS

LOOSE WILES BISCUIT COMPANY

"Cellophane" Division
E. I. du Pont de Nemours & Co., Inc.
Sales Service Section
Wilmington, Delaware.

M 5239

MICRO
TRADE
CARD
MARK ®

5659

MATTHEW BENDER & COMPANY
MB

55

SUBJECT

IMPROVED PROTECTION
TO
BISCUITS
LOCKE MILLS BISCUIT CO.

OBJECT

The evaluation of single walled bags made from several types of transparent sheeting for improved protection to biscuits.

GENERAL

The laboratory report issued March 17th indicated double walled bags made of regular MST "Cellophane" to be markedly superior in protection to single walled container and to offer adequate protection to biscuits exposed to high humidity (81%) for a period ranging from six to eight weeks.

The purpose of these tests was to ascertain the possible improvement in protection afforded by single walled bags made of:

1. Improved MST "Cellophane".
2. Goodyear's rubber sheeting.

when compared with single walled bags made of standard production.

PROCEDURE

1. Films Tested

#300 Special MST - 100% coating
#300 " " - 150% "
#200 --- " - 100% "
#200 MST - 150% coating
#300 " - 200% "
Goodyear's #100 rubber sheeting

2. Packing

One dozen packages in each type of "Cellophane" were

M 5239

fabricated, filled and closed on the Shellmar machine at the Long Island Plant of Loose Wiles. Closures were made by double folding the "Cellophane", covering this with a cardboard collar and stapling in two places.

The type of biscuit used was a macaroon bar with a pineapple flavor.

All units were carefully packed in a large shipping container and transported to the Wilmington laboratory.

Ten bags were hand made from Goodyear's #100 transparent rubber sheeting, supplied by Loose Wiles, filled and sealed in the Sales Service Laboratory.

3. Laboratory Analyses

Moisture analyses were run on the biscuits at the time the test packages were first placed in the humidifying cabinets.

All units were exposed to 81% R.H., room temperature for a period of eight weeks.

The following analyses were made every two weeks:

1. Moisture content by toluol distillation process.
2. Crispness - Numerical rating.
3. Taste - Numerical rating.
4. Permeabilities.

DETAILS OF RESULTS

Moisture analyses will be found in Chart I attached.

Results indicate that protection afforded by single walled bags made of 150%, 200% coatings MST and Goodyear's rubber film

M 5239

to be superior to standard production MST "Cellophane". #100 rubber sheeting gave the best protection from a moisture analyses standpoint.

Crispness ratings will be found in Table I attached. While biscuits in rubber sheeting had a slightly better rating than those in "Cellophane" bags, the difference was not as great as indicated by the moisture analyses. Apparently the macaroon bar used in these tests is more readily affected by small absorptions of moisture, from a "crispness" standpoint, than the biscuit used in the first test.

Numerical ratings for taste will be found in Table I attached. These data refer only to deterioration due to staleness, as no impartation of a foreign taste from any of the films was indicated. Very slight preference was given biscuits in #300 Special MST 150% coating.

Permeability data will be found in Table II attached. Transparent rubber sheeting showed no breakdown. Of the various types of "Cellophane" #300 Special MST 150% coating and 300 MST 200% coating showed the least degradation.

Data taken from the first report issued to Loose Wiles show the following comparisons for single and double walled bags:

	COCONUT TAFFY BARS		
	ORIG. H_2O	FINAL H_2O	H_2O GAIN
Single walled Shellmar	4.38%	7.92%	3.54%
Double walled Shellmar	4.76%	6.22%	1.46%

Unfortunately, due to the difference in the macaroon bars used in both tests and initial moisture contents at time of packing, it is not possible to make a direct comparison. On the basis of actual

M 5239

moisture gained by biscuits in single walled bags of standard production, the results for this test are approximately 0.5% higher as indicated by the following tabulation:

	MOISTURE GAINS
Standard MST - Dobeckmun single (1st test)	3.44
" " - Shellmar " (1st test)	3.54
" " " " (2nd test)	3.97
" " " " (2nd test)	4.05

Interpolating the double walled bag results obtained in the first test, the expected gain in moisture of macaroon bars exposed to 81% R.H. for 8 weeks in double walled bags made of 300 Special MST - 150% coating would be 1.07%.

This protection would be definitely superior to rubber sheeting.

CONCLUSIONS

As a result of these tests, indications are that for single walled bags for protecting biscuits against deterioration due to absorption of moisture:

1. #100 Goodyear's rubber sheeting is better than MST - 150% coating thickness.
2. MST - 150% coating thickness is superior to standard production, but is definitely inferior to a double walled bag made of standard production MST.

BY _____
R. C. Tomlin,
SALES SERVICE SECTION

APPROVED _____
A. F. Wendler, Manager,
SALES SERVICE SECTION

M 5239

eer

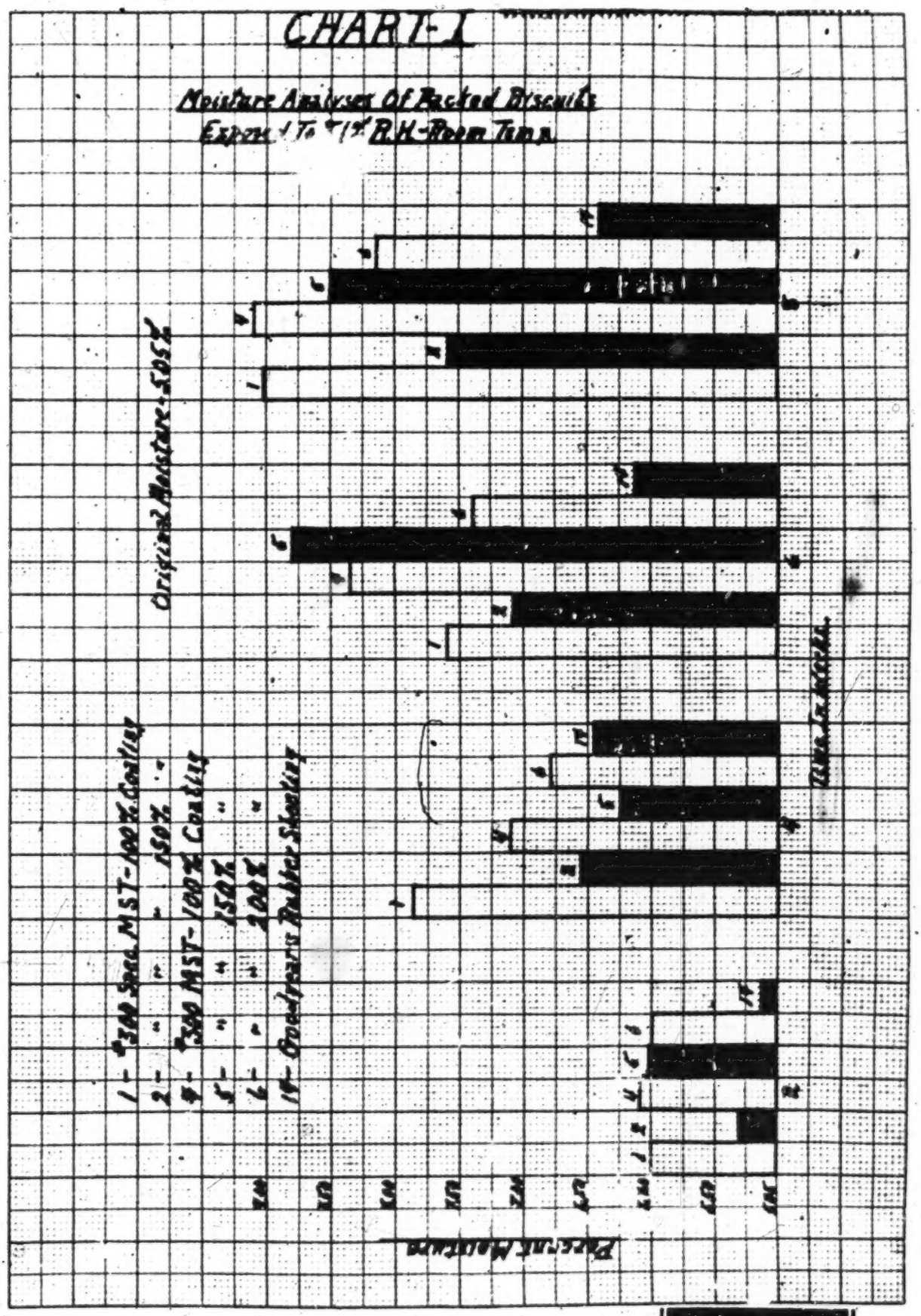
CHART-I
Moisture Analyses Of Packed Biscuits
Exposed To #1% R.H.-Room Temp.
Original Moisture-5.05%
1 - #300 Spec. MST-100% Coating
2 - " " " 150% "
4 - #300 MST-100% Coating
5 - " " 150% "
6 - " " 200% "
14 - Goodyear's Rubber Shooting
Percent Moisture

M 5239

TABLE I

NUMERICAL RATINGS FOR CRISPNESS AND TASTE

FILM	ORIG.	2 WEEKS	4 WEEKS	6 WEEKS	8 WEEKS
DEGREE OF CRISPNESS					
Spec. MST - 100% coating	10	6	5	4	3
Spec. MST 150% coating	10	7+	7	6	4+
MST - 100% coating	10	6	5+	5	3
MST - 150% coating	10	6+	6	5	4+
MST - 200% coating	10	6+	6	6	5
sheeting	10	8+	7	6+	5+
TASTE					
Spec. MST - 100% coating	10	8	7	6+	5
Spec. MST - 150% coating	10	8+	7+	7	7
MST - 100% coating	10	8	7	6	5
MST - 150% coating	10	8	7	6	5
MST - 200% coating	10	8	7	7	6
sheeting	10	8	7	7	6+

Ratings on basis of:

10 - excellent

7 - barely passable

M 5239

TABLE II

PERMEABILITIES

TYPE FILM	IPV	PVM	PVD 2 WEEKS	PVD 4 WEEKS	PVD 6 WEEKS	PVD 8 WEEKS
#300 Spec. MST - 100%	26.4	54	318	408	231	417
#300 Spec. MST - 150%	12.8	48	237	222	214	271
#300 MST - 100%	21.8	61	385	588	386	388
#300 MST - 150%	10.0	28	398	38	314	332
#300 MST - 200%	11.0	60	188	239	196	244
Rubber Film	33.3	61	60	50	48	44

M 5239

Defendant's Exhibit No. 52

EXPERIMENT 39-424

January 17, 1940

CC: ~~C. P. Brown C. P. Benz G. M. Switzer T. L. Hines J. E. Hatt L. A. Yerkes R. E. Manning, Los Angeles (Partial results in letter form.) A. F. Wendler~~

RETURN TO
"CELLOPHANE" SALES
SERVICE LABORATORY
WILMINGTON

2627

FRUIT COOKIES IN BAGS OF "CELLOPHANE"

"CELLOPHANE" DIVISION,
E. I. DU PONT DE NEMOURS & CO., INC.,
Sales Service Section,
Wilmington, Delaware.

M 5240

SUBJECT:

FRUIT COOKIES IN BAGS OF "CELLOPHANE"

OBJECT:

To evaluate various types of "Cellophane" versus Goodyear's rubber film as bags for fruit cookies.

GENERAL:

According to R. E. Henning's trade report #222 of September 26, 1939, the Calirox Company of Los Angeles, California, is interested in Goodyear's rubber film. It is their claim that "the cookies softened in "Cellophane", but this is not true with rubber film".

SOURCE OF TEST MATERIALS:

"Calirox" fruit cookies from the Calirox Company, 7011 Melrose Avenue, Los Angeles, California.

Small bags of each of the following types of film were prepared:

1. MST "For Salted Products"
2. MSQT
3. Goodyear's rubber film

Sixteen of each of the above units were filled with "Calirox" cookies and exposed to 81% relative humidity, room temperature. All units were weighed weekly for four weeks. At each of these periods, samples were removed for moisture and condition maintenance determination.

M 5240

DETAILS OF RESULTS:

The attached Tables I and II show the percent gain in weight and moisture content of "Calirox" cookies respectively.

These results show that after four weeks storage at 81% relative humidity, room temperature, the comparative ratios of protection were:

1. MST - 1.00
2. MSQT - 1.25
3. Rubber - 1.66

This behavior is further demonstrated by the rating for crispness shown in Table III. Goodyear's rubber film maintained better crispness of cookies than "Cellophane" and, of the two types of "Cellophane" tested, MSQT was the better.

CONCLUSIONS:

The results of this investigation indicate:

1. Wraps of Goodyear's rubber film afforded the "Calirox" fruit cookies more satisfactory protection against condition changes due to moisture absorption than did wraps of moistureproof "Cellophane".
2. Of the various types of "Cellophane" investigated, wraps of MSQT were approximately .25% better than those of MST "for salted products".

By W. B. Tibbets Jr.
W. B. Tibbets, Jr.,
Sales Service Laboratory.

C. L. Blair
C. L. Blair, Manager,
Sales Service Laboratory.

APPROVED: A. F. Wendler
A. F. Wendler, Manager,
Sales Service Section.

WBT:SS

M 5240

TABLE I

PERCENT GAIN IN WEIGHT OF "CALIROX" COOKIES

AT 81% RELATIVE HUMIDITY

	1 Week	2 Weeks	3 Weeks	4 Weeks
MST	2.98	4.00	6.74	7.73
MSQT	1.95	3.47	4.65	6.03
Rubber Film	1.31	2.34	2.96	4.03

M 5240

TABLE II

PERCENT MOISTURE CONTENT OF "CALIROX" COOKIES AT 81% RELATIVE HUMIDITY

	1 Week	2 Weeks	3 Weeks	4 Weeks
MST	4.20	6.72	8.30	8.80
MSQT	3.40	4.92	5.68	7.02
Rubber Film	3.12	4.10	4.54	5.32

*Original = 1.28%

M 5240

TABLE III

CRISPNESS OF "CALIROX" COOKIES

	1 Week	2 Weeks	3 Weeks	4 Weeks
MST	8+	7	6+	6
MSQT	10	9+	8	7+
Rubber Film	10	10	9+	9

Key to Numerical Ratings for Crispness

10 = Excellent

8 = Slightly soft

7 = Passable

6 = Definitely soft

M 5240

Defendant's Exhibit No. 53

R-12315*

DU PONT

Cellophane
TRADE MARK

TRADE REPORT
(Trade Analysis Copy)

SALESROOM	☐
PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☐
PLANNING	☐ hs

Salesman: W. A. H. Demme | Date: 10/11/40 | Type Call: P

Firm: Langs Bakery, Inc. | Date last Call: 9/30/40 | Type Call: S | Date last Prod. Call: 8/30/40 | Class: 1-12

St. & No.: 400 Best Street | Bus.: Baker

City & State: Buffalo, N. Y. | Controlled by:

Final Decision by (Titles): Joseph D. ~~Conley~~ Canley | Contacted this call? Yes

Buyer: Wm. Maguire | Contacted this call? Yes

Others Contacted this call (Titles):

Sources of Supply	Est. Cons. lbs. this Calendar Quarter	If using competitive material, state type and reasons
Du Pont	1,500	

Items in transp. sheeting: (specify which is competitive or converted film)

Cookies, special cakes, popcorn.

Other potential products:

Special breads, pound cake, sweet doughs.

SEP 17 1940

a. Sales aids used—specify below:	d. Mailing list changes—below:
b. Latest success story—below:	e. Agreement expires?
c. Service and general remarks—below:	f. Did you secure order?

c. Learned they have adopted a new type of glassine produced by Newark Paraffin & Parchment Company called Mirilite. This has a synthetic rubber coating and is supposed to give greater transparency and better protection. It sells for .19 per lb. Canley claims the Standard Oil Company has constructed a large plant to manufacture this processing for Newark Paraffin. He also stated Goodyear is now producing this same material for Nashua. He further claims this finished paper is

CREATIVE ACTIVITY

1. New items on market since last call—supplier.

4. What is your plan for next call?

10/25/40	S	Miller. Through entire plant with Anderson (Warren Bakery) to observe various pieces of equipment. Miller advised they are getting more mechanized which will enable them to use more "Cellophane".
11/28	S	Wm. Maguire and A. Miller. Discussed possibilities for Denahy stores in general manner. (Couley out of town). Miller wants to experiment with some items. We are sending sample sheets.

M 5036

Defendant's Exhibit No. 54

B-12219*

DU PONT

Cellophane TRADE MARK
TRADE REPORT
(Trade Analysis Copy)

SALES COR	☐
PROM SECT	☐
SALES SERV	☐
ADV SECT	☐
CONV SECT	☐
PROD DEV	☐
SERVICE SECT	☐
PLANNING	☐

Salesman: F. W. Tranfield and M. C. Pollock — Date: 4/7/41 — Type Call: P — mth

Firm: Ward Baking Company — Date last Call: 3/3/41 — Type Call: P — Date last Prod. Call — Class: 1-12

St. & No.: 367 Southern Blvd. — Bus.: Baker

City & State: New York, N. Y. — Controlled by:

Final Decision by (Titles): Committee — Contacted this call?

Buyer: F. F. Kleinmann, Gen. P. A. — Contacted this call? yes

Others Contacted this call (Titles)

Sources of Supply	Est. Cons. lbs this Calendar Quarter
Daniels	5,000
Du Pont	75,000
Sylvania	60,000
Shellmar	5,000

If using competitive [illegible]

RETURN TO "CELLOPHANE" TRADE ANALYSIS

Items in transp. sheeting (specify which is competitive or converted film)

Soft cake, sweet doughs, special bread, doughnuts, Christmas fruit cake.

Other potential products:

Special breads and cakes.

a. Sales aids used—specify below:	d. Mailing list changes—below
b. Latest success story—below:	e. Agreement expires? 8/31/41
c. Service and general remarks—below:	f. Did you secure order? Placed

a) "Hidden Dividends".

c) #54 Film — Further questioning them regarding their decision on the use of this type of film, Mr. Kleinmann states that he wishes to mark time until September. In the meanwhile he will have a greater opportunity to discuss the film with Hoffman.

Further attempt to get O.K. on Watch Your Stop film showing with Kleinmann's promise to consider.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
4. What is your plan for next call?

decision on the use of this type of film, Mr. Kleinmann states that he wishes to mark time until September. In the meanwhile he will have a greater opportunity to discuss the film with Hoffman.

Further attempt to get O.K. on Watch Your Stop film showing with Kleinmann's promise to consider.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made, including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

1. Crumb Covered 15¢, 10 oz. coffee cake, cardboard boat, machine overwrap #300 MST-52. General distribution.

2. See above.

3. Specialty Breads — Promotion of Ad-Seal-It band and #300 MST-51 "Cellophane" wrap. General discussion relative to Hidden Dividend data with an attempt to stress visibility factor needed in meeting public demand plus competitive activity.

   Mr. Kleinmann made his usual observation that "Cellophane" was a costly medium of merchandising for the bread baker stating that the difference in "Cellophane" purchases vs. wax last year against the yearly earning statement was parallel and that the use of a cheaper wrapping medium would have improved their statement figures. Mr. Kleinmann's further remarks indicated that they have discussed riegeline within the company in recent weeks in a search for cheaper packaging. He questioned our sales increase figures, commenting the less said about this the better.

   We pointed out that there is no compromise with "Cellophane", emphasizing visibility, yield, machine performance, etc.

4. M. C. Pollock to approach problem through advertising agency contact and attempt to meet key men at the agency in a film showing.

5. None.

OVER

M 5134

Defendant's Exhibit No. 55

R-12315*

DU PONT

Cellophane TRADE MARK

TRADE REPORT

(Trade Analysis Copy)

B	
SALES COR.	☐
PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☑
PLANNING	☐

Salesman: F. W. Tranfield AND M. C. Pollock — Date: 9/10/41 — Type Call: P — Class: h

Firm: Ward Baking Co. — Date last Call: 8/13/41 — Type Call: P — Date last Prod. Call: — Class: 1-12

St. & No.: 387 Southern Blvd. — Bus. Controlled by: Baker

City & State: New York, N. Y.

Final Decision by (Titles): Committee — Contacted this call?

Buyer: F. F. Kleinmann, Gen. P.A. — Contacted this call? yes

Others Contacted this call (Titles)

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter
Milprint	15,000
du Pont	75,000
Sylvania	60,000
Shellmar	5,000

If using competitive material, state type and reasons

Items in transp. sheeting: (specify which is competitive or converted film)

Soft cake, sweet doughs, special bread, doughnuts, Christmas fruit cake.

Other potential products.

Special breads and cakes.

a. Sales aids used—specify below:

b. Latest success story—below

c. Service and general remarks,—below:

d. Mailing list changes—below:

e. Agreement expires? 8/31/42

f. Did you secure order? Placed.

Inventory -- Within normal range and have decided against building backlog notwithstanding rumors that they hear of possible cellulose shortage.

Agreement -- Presented new signed agreement for their files.

Packaging Economy -- Again stressed the importance of trimming "Cellophane" on cake and bread items and suggested we visit all plants to carry this out. Mr. Kleinmann stated we should have opportunity

CREATIVE ACTIVITY

that they hear of possible cellulose shortage.

Agreement -- Presented new signed agreement for their files.

Packaging Economy -- Again stressed the importance of trimming "Cellophane" on cake and bread items and suggested we visit all plants to carry this out. Mr. Kleinmann stated we should have opportunity

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls:
3. Creative effort: (a) Objective this call? (b) Specific suggestions made, including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

soon enough to perform this service for them.

"Diaphane" -- In an economy move they have replaced "Cellophane" with diaphane on 15¢ tea rings. Mr. Kleinmann made the statement that they were losing money consistently and one of their high costs is "Cellophane". This is a wrong move, especially on the face of scaled down weights and higher retail prices, as they must depend on appetite appeal thru visibility to sell the product.

Mr. Kleinmann non-committal on whether they planned further use of diaphane on cake and bread items.

Seconds -- Again attempted allottment of seconds orders for each plant - acceptance at no loss to them, improves our own facilities to give them greater service, etc. we explained.

Mr. Kleinmann not helpful on this score.

9/16/41 RJC	1	S (9/10) F. F. Kleinmann, G.P.A. Presented rebate agreement check. Thanked them for past favors and truested we would go further with them in the ensuing years, etc.

OVER

M 5037

9/26/41		S (9/16) P. P. Kleinmann, Gen. P.A.
MCF.		1- Presented new program completely.
		2- Mr. Kleinmann's comment was that situation in packaging materials is getting worse.
		3- Could get no comment on new yield though we pointed out definite saving to them.
		4- Mr. Kleinmann introduced us to R. G. Cowan the new president. We covered our past activity, praised Mr. Kleinmann's cooperation, etc. Mr. Cowan very affable and briefly commented on his association with members of the C.I.L. when he was head of Brown Bakers, Toronto.

M5037

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL ☐

CUSTOMER: Holsum Bakers, Inc.

SALESMAN: J. A. Schaeffler-J. R. Dean

DATE LAST REPORT: 1/22/48

ST. AND NO.: 22nd St. & Hillsboro Ave.

DATE: 2/20/48

CONTROLLED BY: W. R. Long Co.

PURCHASING AUTHORITY:

CITY-ZONE-STATE: Tampa, Fla.

CLASS: 1-12

INDUSTRY: B&C

Dr Jones
Tampa
Letter
C

DU PONT CELLOPHANE

SUPPLIER	USE THIS QTR.
DU PONT	[illegible]

COMPETITIVE MATERIALS

MANUFACTURER THROUGH	PT. MT. CA. ETC	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
Sylvania Direct	MT	1M			

TURN IN "CELLOPHANE" TRADE ANALYSIS

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	W L CHGE
C. Henriquez	OffMgr	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	B S C	ANNUAL POTENTIAL
3-17-41 MR				
3-17-48 MR				
4-12-48 MR				
TOTA				

1. Follow store surveys - all bread but raisin loaf now in opague wrap.

2. Medina out of town. All Tampa bakers discontinued Cellophane 10 days ago. Now using 1M pounds per month on raisin loaf.

3. Into bakery to inspect new plant. Has nearly two months inventory of Cellophane on basis of past usage.

   Henriquez admits buying new three colow printed "wrap in glass" opaque in very limited quantities as uncertain how long will stay out of Cellophane Also intimated cost higher than expected.

M1114

B-1271 10 V 11-47 * R-ROLLS S-SHEETS, C-CONVERTED

Defendant's Exhibit No. 56

BULLETIN

INFORMATION BULLETIN NO. 112-SS

W.J.HARTE

November 24th, 1941

VARIETY BREAD SITUATION

It has been growing increasingly apparent that certain important organizations are promoting the discontinuance of "Cellophane" on variety loaves - for reasons well known to all of you. It is possible they will give two reasons for this move:

1. Rising ingredient costs, plus the Government pressure against increasing selling prices further, has made it necessary to cut costs wherever possible.

2. Government pressure toward elimination of stales might lead to the elimination of consignment selling.

This was the situation in one of our important mid-western markets. All of the largest bakers had gone out of "Cellophane" on whole wheat, cracked wheat and rye. Stale returns immediately rose and it was evident there was considerable uncertainty as to the wisdom of the move.

The situation was handled by our men with these accounts with the idea of increasing this uncertainty. These points were stressed:

1. The bakers' basic job is to operate profitably whether they use wax or "Cellophane".

2. 35% to 40% of their business (variety loaves) had been built up on "Cellophane" because the consumer wanted it.

3. The growth of variety sales had been established principally by visibility.

4. Without visibility the baker must face other sources of competition in this variety market.

   (a) The retail bake shop.
   (b) The house-to-house baker.
   (c) The bakery department of chain bakers, like A. & P. or Kroger, which are getting more and more grocery business as opposed to the independent grocer - the wholesale baker's customer.
   (d) Other foods, which have reduced per capita consumption of bread, would make the most of this opportunity to reduce it still further.

M 5171

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

"CELLOPHANE" DIVISION

2641

5. With lower cost per 1,000 square inches, the spread between wax and "Cellophane" is so small as to be completely wiped out by stale increases.

6. The Government's position on reduction of stale is sound. The original reason the baking industry went to "Cellophane" on variety loaves was to reduce stale returns.

The foregoing reasoning, plus their own mounting stale returns, seems to have created considerable doubt in this market regarding the "advantage" of eliminating "Cellophane".

Independent bakers in this market have not gone out of "Cellophane". In contacts with them the following points were brought out.

1. Much of their business was built on "Cellophane".

2. With rising stale cost, as well as other costs, they would scarcely be in a position to compete in advertising. For example, a baker using a 2% appropriation doing $400,000. a year could spend $8,000., whereas a baker doing $2,000,000. per year could spend $40,000.

3. With "Cellophane", they are on an equal footing from the standpoint of letting the product appeal to the housewife when she buys.

4. Discontinuance of consignment selling would work to the disadvantage of the small baker without "Cellophane".

   (a) The larger baker could point to radio, billboard and newspaper advertising as a way of helping the grocer sell the non-returnable product.
   (b) Without a demonstrable means of selling the product, small bakers would be ruled out of many stores entirely.
   (c) Lack of "Cellophane" would mean higher stales with attendant grocer and consumer dissatisfaction. With varieties ruled out by the grocer, this would throw all emphasis on the standard white loaf, which is heavily advertised and promoted by those with large appropriations.

5. With "Cellophane" (even on a reduced basis) the smaller baker would be at a decided advantage since the grocer would buy only those products he knew would sell through his past experience with "Cellophane".

343342 O - 55 - vol 6 - 31

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CA ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
BOLD BAKING CORP.	H. B. PUTNEY	6/4/48
829 Industry St.	DATE 7/8/48	CONTROLLED BY PURCHASING AUTHORITY
CITY STATE Pittsburgh 10, Penna.	CLASS 1-12	INDUSTRY Baking

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	FT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	1,500	Sylvania	Direct	MT	7,500	6,500	6,000	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL YD	M. L. CHGE
Louis Marhoefer	Pres.	X		
Robert R. Morris	Mgr. & P.A.	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
7-21-4. 1-2				
TOTAL				

R-1737 - REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. White Bread -- used "Cellophane Prospectus".

2. Good two hour session. There is no question they will follow if anyone breaks. They have three months' inventory wax and a contract that has six months to run. Marhoefer is the kind of guy who would break it. Interest here is genuine, although would not give an immediate okay in view of wax contract. Will take 4M lbs./month to handle.

After cost study, they sounded out re switching rolls and Vienna from wax to Cellophane. Told them as long as they represented new items we would increase our allocation to handle. They will switch rolls to Cellophane when wax inventory depleted.

2 of

M1109

4293

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

138

6. Rising stale costs would rapidly cut the difference between wax and "Cellophane" and would reduce average net sales per stop, thus adding to trucking cost. (Here "Hidden Dividends" was used inversely in demonstrating how these costs would rise.)

In contacts with independent bakers, it was established that they would continue in "Cellophane" as long as it was available to them.

The foregoing is rather lengthy, but it is worth careful study as a technique which may be used as a means of combating such moves in your territory. Use them before the fact. Establish this line of thought - and there won't be any "after the fact" need.

C. F. Brown,
DIRECTOR OF SALES.

H

M 5171

Defendant's Exhibit No. 60

5 out of 8 buy Riegel

Five of the eight largest bakers of crackers and pretzels buy Riegel Papers regularly

Among the bakers of crackers and pretzels, and in many other fields, you will find that most of the sales leaders are regular Riegel customers. They buy from us simply because they know we can make packaging and industrial papers that combine technical excellence with economy and production efficiency. Their confidence in Riegel is an important reason why your company—whether large or small—should see if we can also help you. Riegel Paper Corporation, 342 Madison Avenue, New York 17, N. Y.

Riegel Papers We produce over 600 different packaging, printing, converting and industrial papers. If we don't have what you want, we can probably make it.

M 5237

per lb. Canley claims the Standard Oil Company has constructed a large plant to manufacture this processing for Newark Paraffin. He also stated Goodyear is now producing this same material for Nashua. He further claims this finished paper is

---

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

being vigorously promoted by Newark and Nashua and several large bakers have adopted it.

Learned bread would be reduced 1¢ effective 10/14/40.

---

1. None.

2. Surveys are being made as we discussed on our last call. However, they don't even resemble the plan we suggested. Their surveys are being made by their routemen and women are only asked if they purchase from a h.-to-h. baker.

   We pointed out the fallacies in a survey of this kind and advised he just couldn't call it a survey.

3. Compared their present glassine wrapper with "Cellophane" wrapped product. Pointed out the complete visibility better protection, etc.

   Tried to figure comparative costs but Canley did not have yield figures.

   R. Couldn't budge him a bit. Claims he gets almost as good visibility and protection at a much lower cost.

4. Give more facts.

   E. C. L. B. K.

5. A. & B. Have you heard of this new kind of paper and do you have any figures pertaining to its yield, permeability, etc?

HANDLED

please handle

OVER

M 5836

Defendant's Exhibit No. 57

[COPY OF ILLEGIBLE TEXTUAL MATERIAL]

DEFENDANT'S EXHIBIT NO. 1133 A

DU PONT
E. I. DU PONT DE NEMOURS & COMPANY
Incorporated
Wilmington, Delaware

Copy
10-5-1A

CC: J. E. DEAN
W. J. HARTE
E. C. LAKE
L. B. STEELE
Fischer & Huber

Cellophane Division

June 14, 1945

TO: W. G. HUNTER C.L.B. - H.D.H.

FOR: D. E. DREW

FROM: C. F. BROWN

Why can't we use some of our friends in Baking Industry to get all types of competitive material. Prices yields Physical properties can be obtained from samples.

Subject: TYPES OF BREAD WRAPPERS

The following is excerpt from article on post-war bakery packaging in the May issue of Modern Packaging (p. 94):

"Perhaps a brief resume of the principal materials used for bread wrapping would be helpful to explain the advantages of each type. These materials are classified as follows:

1. Low finish bleached sulphite - used mostly for large institutional and restaurant loaves where eye appeal of the package is not so important.

2. Opaque waxed sulphite - has more shine and opacity due to use of titanium and clay coating.

3. Waxed transparent sulphite - highly supercalendered and prepared first with wax bath - later treated with hot wax.

4. Waxed glassine - used widely in South and Southwest. Has been limited in its use in the past because it is not so strong and was difficult to keep pliable. Strength and flexibility have been greatly improved by treatment of fibre in the base stock.

5. Lacquer-coated glassine - is quite transparent and will be promoted after the war to compete with Cellophane because of its lower price. May be used in the future on white bread to give package effect of a cellophane wrap. Said to be about two-thirds the price of cellophane.

6. Cellophane - used mostly unprinted with wrap-around paper labels and end seals for brand and product identification. Unprinted roll cellophane is more economical because it can be used for any purpose in the bakery, whereas printed cellophanes are limited to specific use for which they are made."

1. Purchasing
2. F & F
3. Net Med Rec
4. Use AS Hess Co.data sheet for recordg.

Due to the importance of this market, I feel we should be thoroughly and currently informed regarding our competition - various types of paper.

Without question, the paper people recognize the growing threat of Cellophane and are working hard to improve their product, particularly in the direction of transparency.

(over) C307-1C

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Kannapolis Bakery	J. T. Greene	5/17/48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
Cannon Blvd.	10/12/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Kannapolis Charlotte, N. C.	1-12	Baker

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC	1ST QTR. PUR	2ND QTR. PUR	3RD QTR. PUR	4TH QTR. PUR
DU PONT	1.2M	Sylvania	Pkg.Prod	MST	0	1M	0	0

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
L. V. Coggins	Owner	X		
L. B. Lyerly	"			
Geo. Austin	PM			

RETURN TO

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Std. white bread	0	MST	C	20M
Other white bread	0	"	R	4M (M plus 9 1500 pounds per day)
Variety bread:				
W.W.	0	"	R	1M
Rolls	0	"	C	5M
Cake	5.5M	"	S	5.5M
11-15-48 [illegible]				
TOTAL				

1. Check on order.
2. Placed.
3. Interested in cake wrapping machine. Dissatisfied with egg bread in printed Sylvaniafilm and changed to wax. No sales decrease.

M1117

Defendant's Exhibit No. 61

I suggest that someone be assigned to the job of collecting samples of the types of wraps listed, together with *yields - and, in particular, the latest developments in attempt to get transparency.

I understand Riegel Paper Company and Marathon are particularly active in this direction. Also suggest you consult with F. & F., who are supplying coating lacquers for this purpose.

CFB MdM

*prices and

P.S. L. B. STEELE: Have you data or samples to contribute?

C 307-1D

DUPONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER		SALESMAN	DATE LAST REPORT
hw	COLONIAL BISCUIT COMPANY	W. B. DAVIS	2/21/49
ST. AND NO.	DATE	CONTROLLED BY	United Biscuit Co., Chicago, Ill.
	1801 Forbes St. 5/6/49	PURCHASING AUTHORITY	Colonial Biscuit Co., Pgh., Pa.
CITY-ZONE-STATE	CLASS	INDUSTRY	
Pittsburgh 19, Penna.	1-12	C. & B.	

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT MT CA ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR PUR
DU PONT	3,500	Sylvania	Direct	MT	0	0		

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M L CHGE
R. J. Walsh	Pres.	X		
K. R. Garver	P.A.	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM CODE	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. Saltines -- Used Salerno and Schulze - Burch units "Freshness Preferred."

2. Good interest on part of Walsh who has recently been in Chicago conferring on Schulze-Burch type of unit. Some indication opening tape being considered for individual packages. Conference with machine people scheduled for next week. No specific commitment as yet.

3. Simplex machine making bags with about 1" open on seam seal. Corrected by subject's maintenance department.

Learned subject planning to convert from Cellophane to printed wax paper overwraps on carton goods.

Reasons:

a) Following lead of 13 of United Biscuit's 18 divisions which have already converted and find market reception satisfactory.

b) Improved high gloss printed wax appreciably lower in cost than Cellophane.

1948 M 5150

Defendant's Exhibit No. 62

R-12727-B

DU PONT

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER: COLONIAL BISCUIT CO. - SALESMAN: W. B. DAVIS

ST. AND NO.

DATE: 5/6/49

CITY-ZONE-STATE: Pittsburgh 19, Penna.

CLASS

c) Use of unprinted cartons and printed overwraps will greatly reduce carton inventory. Present need for maintaining printed carton inventory is costly as many cartons are same size.

We emphasized strong consumer prefcrence for Cellophane, additional protection, point of sales appeal, as well as production features. Subject feels, however, on basis of information supplied by other dividions, comparing printed paper overwraps and unprinted cartons with printed cartons and unprinted Cellophane, that former is equivalent from sales standpoint at less cost. Will work toward specific cost comparison, market reaction new type unit.

New Items --	Cocoanut Strips (9 oz.)	carton	plus	o.w.
	Chezo	"	"	"
	Toasts (1 lb.)	"	"	"
	Jamaica Snaps	"	"	"
	Saltines (2 lbs.)	"	"	"

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER

SALESMAN

COLONIAL BISCUIT CO. - W. B. DAVIS

ST. AND NO.

DATE

5/6/49

CITY-ZONE-STATE

CLASS

Pittsburgh 19, Penna.

c) Use of unprinted cartons and printed overwraps will greatly reduce carton inventory. Present need for maintaining printed carton inventory is costly as many cartons are same size.

We emphasized strong consumer preference for Cellophane, additional protection, point of sales appeal, as well as production features. Subject feels, however, on basis of information supplied by other dividions, comparing printed paper overwraps and unprinted cartons with printed cartons and unprinted Cellophane, that former is equivalent from sales standpoint at less cost. Will work toward specific cost comparison, market reaction new type unit.

New Items --	Cocoanut Strips (9 ox.)	carton	plus	o.w.
	Chezo	"	"	"
	Toasts (1 lb.)	"	"	"
	Jamaica Snaps	"	"	"
	Saltines (2 lbs.)	"	"	"

...RN TO
...ORPHANE"
...E ANALYSIS

M 5150

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Ontario Biscuit Co.	E.S.Foley - F.W.Tranfield	4/11/49

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
20 Watson Street	5/23/49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Buffalo 10, N. Y.	1-24	Cr.-Bisc.

Dr. of Sale
Letter
R J Crowley (+)
V C Clark (+)

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	9-M		0					
Shellmar	5-M							

REPORT CALL BELOW.
SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
Robert Kendall, Production Supt		X		
M. J. McPolin	P.A.	X		
All members of Sales Management Attending Chicago Meeting.				

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	* R S C	ANNUAL POTENTIAL
TOTAL				

RETURN TO CELLOPHANE TRADE ANALYSIS

JUN 3 1949

1a) To learn initial requirements for multiple packaging of Club Crackers.

b) Counter printed wax overwrap competition.

2a) Gave data on Battle Creek machine to McPolin. Unable at the moment to set roll width requirements.

2b) Printed Wax overwrap
Decision has been made to adopt printed wax overwrap vice lithographed carton and cellophane on Club Crackers, leading item in their line, as soon as present inventory of the latter is exhausted, probably early fall.

Factors governing this decision are: (1) alleged less cost; (2) successful experience of other members of United Biscuit Co. group notably Keebler-Weyl & Streitman. Judging by comment, Streitman particularly sets the patterns for this account. McClellan, Pres. of United Bisc. in Chicago has also had influence (see TR 3/21/49 this acct).

Kendall believes cellophane to be far superior from a functional and merchandising point of view, although admitting that wax paper converters have improved both the finish and clarity of reproduction.

B-1277-A * R-ROLLS S-SHEETS C-CONVERTED

M 5146

CUSTOMER: Ontario Biscuit Company

SALESMAN:

ST. AND NO.: 20 Watson Street

DATE: 5/23/49

CITY-ZONE-STATE: Buffalo 10, NY

CLASS: 1-24

Will plug this production angle as one effort to combat this competition.

Other lines of attack to be used are:

(1) Store surveys in the company of Gerber, packaging analyst for Ontario, in which contrasting types of packages (Burry's e.g.), are to be used to get the dealers preference. (Gerber will remain anonymous in these surveys to get unopinionated dealer comment.

(2) Data from Eastern Districts "White Bread Prospectus". Essentially the selling effort here is identical with our white bread promotions:

a) Analysis of costs of packaging materials.
b) Inventory costs and possible losses.
c) Machine cleaning in man-hrs.
d) Machine operating efficiency.
e) Consumer acceptance and preference.
f) Loss of brand identification when wrapper is stripped off.

Sales Status -- Purchases for the last two months are 1/3 of normal because of inventory reduction and slumping sales.

5b) Copies for Eastern and Central Districts.

General Sales please handle

M 5146

4300

145

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT CELLOPHANE

FIRST CALL ☐

CUSTOMER: Ontario Biscuit Company

SALESMAN: E. S. Foley

DATE LAST REPORT: 5/23/49

ST. AND NO.: 20 Watson Street

DATE: 6/2/49

CONTROLLED BY PURCHASING AUTHORITY

CITY-ZONE-STATE: Buffalo 10, N. Y.

CLASS: 1-24

INDUSTRY: Cr.-Bisc.

1) Jeremann
~~Dr Sales~~
~~Butler~~
~~Pollock(4)~~
~~Kjellander(4)~~

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	12-M		0					
Shellmar	5-M							

REPO: ALL
BY W

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
Glen Gerber, Packaging Spec.		X		
Frank Gerber, Asst. to Prod. Supt.		X		
Ray Mercer, Asst. Sales Manager		X		
M. J. McPolin	P.A.	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
				10
TOTAL				

RETURN TO CELLOPHANE TRADE ANALYSIS

B-12727 A

* R-ROLLS S-SHEETS C-CONVERTED

1. Overcome printed wax overwrap competition by offer of company services and by special approaches as outlined in report of ~~5~~/23/49.

2. Price is now becoming the main negative to be overcome. The difference in price is 39¢ per hundred (printed wax and carton), $2.85 per C vs. $3.24 for lithographed carton and cellophane.

Account Data

Although initial reason for adoption on graham cracker item, the only product now in wax, was the constant problem of breakage (this despite repeated effort and studies particularly R. C. Schilly's extensive investigation in Oct. '47. Physical plant limitations preclude adequate cooling). Adoption by Keibler-Weyl and Streitman of printed var on certain items and their subsequent satisfaction was an additional factor that has influenced Ontario's management to expand use to Club Crackers and Saltines.

Streitman seems to set the example for most units of United Biscuit Corp. Ontario's adoption of printed cellophane, vice unprinted cellophane, on four of their boxed cookie items was decided principally on the basis of the success Streitman has had with the Chocolate Chip cookies and its Rainbow Assortment.

M 5147

4301

146

Defendant's Exhibit No. 64

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER	SALESMAN
Ontario Biscuit Company	
ST. AND NO.	DATE
20 Watson Street	6/2/49
CITY-ZONE-STATE	CLASS
Buffalo, NY	1-24

Gerber Jr. quoted figures -- sales went from an average of 7-M doz. units per month before printed cellophane to 13-15-M doz. after adoption.

Mercer added that it was unlikely that Sawyer Bisc. would adopt printed wax because McClellan of this company has an interest in Chicago Carton Co. and that Sawyer will retain Chicago Carton as a source of supply.

Sales Status -- all items in Ontario's line in the last two months have suffered severe sales decline Club Crackers which represents about 60% of their total production is down about 35%. Bagged items are moving slowly. Their new boat items have met consumer resistance. Management feels now they xx were about a year late with the introduction of these packages.

Future Plans -- Industry Trends.-- On the basis of discussions at the recent United Biscuit Company's General Sales meeting, in Chicago last week, it appears that new packages and items will take the form of smaller, higher count to the lb. items because of price and value consciousness that is being evidenced by the consumer. Efforts will be made to introduce items that are radically new. Keibler-Weyl's Ritz type cracker, they call "Town House" in an oval form rather than the conventional disc shape was cited as an example.

Assistance Given -- Reviewed a contemplated new package they plan to call "Anytime" with a clock-face on front panel (for sugar cookies). Suggested submission to John Jenemann for his opinions and recomendations.

Retail Store Survey -- made plans to accompany Glen Gerber on a store survey this coming wk along the lines of TR 5/23/49.

5b) Eastern and Central Districts - note above.
J. L. Jenemann -- Gerber is forwarding to your attention sketches for new cookie. Your appraisal on all points will be welcomed.

HANDLED JLT 6/17/49

General Sales please handle

M 5147

4302

147

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL ☐

CUSTOMER: Union Biscuit Co.

SALESMAN: E. E. Morgan

DATE LAST REPORT: 4-19-49

ST. AND NO.: 1110 N. 6th St.

DATE: 6-2-49

CONTROLLED BY

PURCHASING AUTHORITY

CITY-ZONE-STATE: St. Louis 1, Mo.

CLASS: 1-24

INDUSTRY: C1& B

DU PONT CELLOPHANE

SUPPLIER	USE THIS QTR.
DU PONT	12 M
Brooks	1 M

COMPETITIVE MATERIALS

MANUFACTURER	BUYS THROUGH	FT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
0						

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE
C. E. Kennedy	V.P. & G.Mgr	X		
H. B. Schneider	P. A.	X		
L. Huber	Cost Acct.	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727 A

* R-ROLLS S-SHEETS C-CONVERTED

1. Follow for July order to include extra poundage for planned new usage (TR 4/19)).

2. Will not require extra until August--delay in plans. Unable to gain usage info. again.

3. Obj. developed--MsTs as cracker, biscuit and cookie carton liners to replace present waxed glassine--to learn present glassine costs. Figured all size sheets used to show number of cellophane sheets each size per pound on yield basis (same as units per pound). This is glassine bought at from 17 to 19¢ per pound in sheet form. Acct. will check records to determine sheets (units) per pound on glassine. This will determine glassine costs on a competitive basis with cellophane--what we have to meet price-wise.

M 5148

4303

Defendant's Exhibit No. 65

Defendant's Exhibit No. 66

CELLOPHANE TRADE REPORT - TEMPORARY FILE COPY

DU PONT

FIRST CALL ☐

CUSTOMER: DAVE LEE BAKING CO.		SALESMAN: I. GUERKE - J. R. SCOTT	DATE LAST REPORT: 4/5/49
ST AND NO: 130 Underwood St.	DATE: 6/2/49	CONTROLLED BY / PURCHASING AUTHORITY	
CITY-ZONE-STATE: Zanesville, Ohio	CLASS: 1	INDUSTRY: Baking	

IFP

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR. PUR.
DU PONT	2M				0			

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	MAIL CHGE
Robert Stewart	Owner	G.M.X	MS	
Myron Retcock	S.M.			

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

LG

1. (a) Promote small white loaf on Cellophane.

   (b) Plant inspection.

2. Attitude favorable but no positive reaction.

   (b) Inspected plant.

3. Planning to break large loaf (20 oz. sandwich loaf) in new opaque wrap in about 2 weeks. Wrap is called "Kalakote" - manufactured by Kalamazoo Veg. Parchment. Cost - $23.16 per 11 lb. 2 colors. It is a high gloss paper. Manufacturer claims following properieties:

   1) Will not smudge or deposit wax on hampers, clothes, etc.

   2) Maintains high gloss under rough handling.

   3) Weld seals - seals approximately 50° higher than ordinary wax paper.

   See sample of plain "Kalakote" attached.

M5265

R-12727 A * R-ROLLS S-SHEETS C-CONVERTED

Defendant's Exhibit No. 67

W.G.M. 4447

CELLOPHANE DIVISION
TECHNICAL SERVICE LABORATORY

REQUEST FOR WORK
(Submit in duplicate)

TO: Cellophane Division,
Technical Service Laboratory,
711 Orange Street,
Wilmington,

FROM: I.F. Peake

Request Approved By _____

Date 8/15/49
Job Number 49 446
Date Received 8/15/49
Date Started 8/15/49
Date Completed 8/25/49
Completed By W.G.M.
Approved By B

Subject: Competitive - "Kalakote" - Code LG-7 - Dave Lee Baking Co. Zanesville, Ohio (Kalamazoo Vegetable Parchment Co.)

References: T.R. L. Guerke - J.R. Scott 6/2/49

Purpose of Work: To check qualities of sample waxed paper

Number of Samples 1 Sample Numbers LG-7

Description of Samples: Attached

Disposition of Samples: —

ANS. FILE
[illegible] 1949
I.F. PEAKE

ANALYSES REQUESTED
(Please list below and number)

RESULTS

① Heat Seal - Cond. at 35% before making seals. No seal strength (Seals made on Precision Sealer + Dry seals)
② IPV - 139
③ Unit Weight + Area Factor. 70.42 g/sq. meter 10,055 area factor

See back of sheet for additional results, calculations and comments.

M5266

Defendant's Exhibit No. 68

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

~~DIRECTOR OF SALES~~

Stuttle
Letter
L

CUSTOMER	SALESMAN	DATE LAST REPORT
PURITY BISCUIT COMPANY,	M. A. GOW - H. D. CHICKERING	8-4-49

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
471 West 5th South	9-27-49	United Biscuit Co.-Chicago, Ill. Local.

CITY-ZONE-STATE	CLASS	INDUSTRY
Salt Lake City, Utah.	1-6	C & B

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	6M	Sylvania	Dixon	MT	1M	1M	1M	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
Stan Anderson	P. A.	x		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Crackers	22M	300 MST-52	R	70M
Cookies	28M	300 MST-53	R	50M
TOTAL	50M			120M

R-12727-A R-ROLLS S-SHEETS C-CONVERTED

1. Graham Crackers 4-in-1 pack - 300 MST-54.

2. Using samples, further discussed merits of fractional packaging. Had not considered packaging Graham Crackers in this way and prefers to wait to see how new cracker pack works out. Also discussed proper storage of Cellophane for best performance.

3. Competition! Still using Sylvania film on "fill-in" basis from local warehouse. Made strong bid for this business on basis of speed of delivery and service. Indicated some dissatisfaction with 60 day delivery and performance of Sylvania film.

   Current use: Because of change on saltine package from Cellophane overwrap to printed wax, using only 4M per month. Annual consumption figures revised accordingly.

   New item: Saltines 4-in-1 pack - 300 MST-54 with Zip tape opening on each unit. Estimated annual consumption 15M. This item probably will not be released until December 1949.

5. (b) ~~Technical Section~~: ~~Please~~ sent Anderson two storage charts.

OCT 3 1949

M 5157

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DIRECTION OF S

FIRST CALL ☐

Quality Biscuit Co.

1512 W. Pierne St.

Milwaukee, Wis.

DATE 9-28-49

CLASS 1-12

SALESMAN J. Couturier

CONTACTED BY U.B.C. - Chicago

PURCHASING AUTHORITY Local

INDUSTRY C & B

DATE LAST REPORT 8-1-49

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., WT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	12 M		0					
Milp.	1 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	SEE TO	B. C. CHGE.
A. E. Lohman	P.A.	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	A B C	ANNUAL POTENTIAL
TOTAL				

A-USED B-SHELLS B-SHEETS C-CONVERTED

1. Observe new 4 in 1 operation

3. Have 2 Battle Creek Model 43 machines wrapping th inner units running at 60/min. Girls assemble 4 unit per carton which then goes thru Package machine. Using unprinted carton overwrapped in 5 color roto printed wax. According to Lohman, they are using 40 lb. wax costing $34 per cwt.

He intimated that sales dept. did not like the wax wrapper, but Krause (pres.) preferred it and therefore that settled it. We cited the yield of cellophane as compared to this weight wax and pointed out that they could wrap 75 cartons in cellophane as against 40 in wax.

Lohman estimates usge of cellophane at about 6 M lbs. monthly for fractional units. In first 2½ weeks they have used 3500 lbs.

Future plans - they plan to produce a 2 in 1 and 8 in 1, in addition to this 4 in 1.

OCT 6 - 1949

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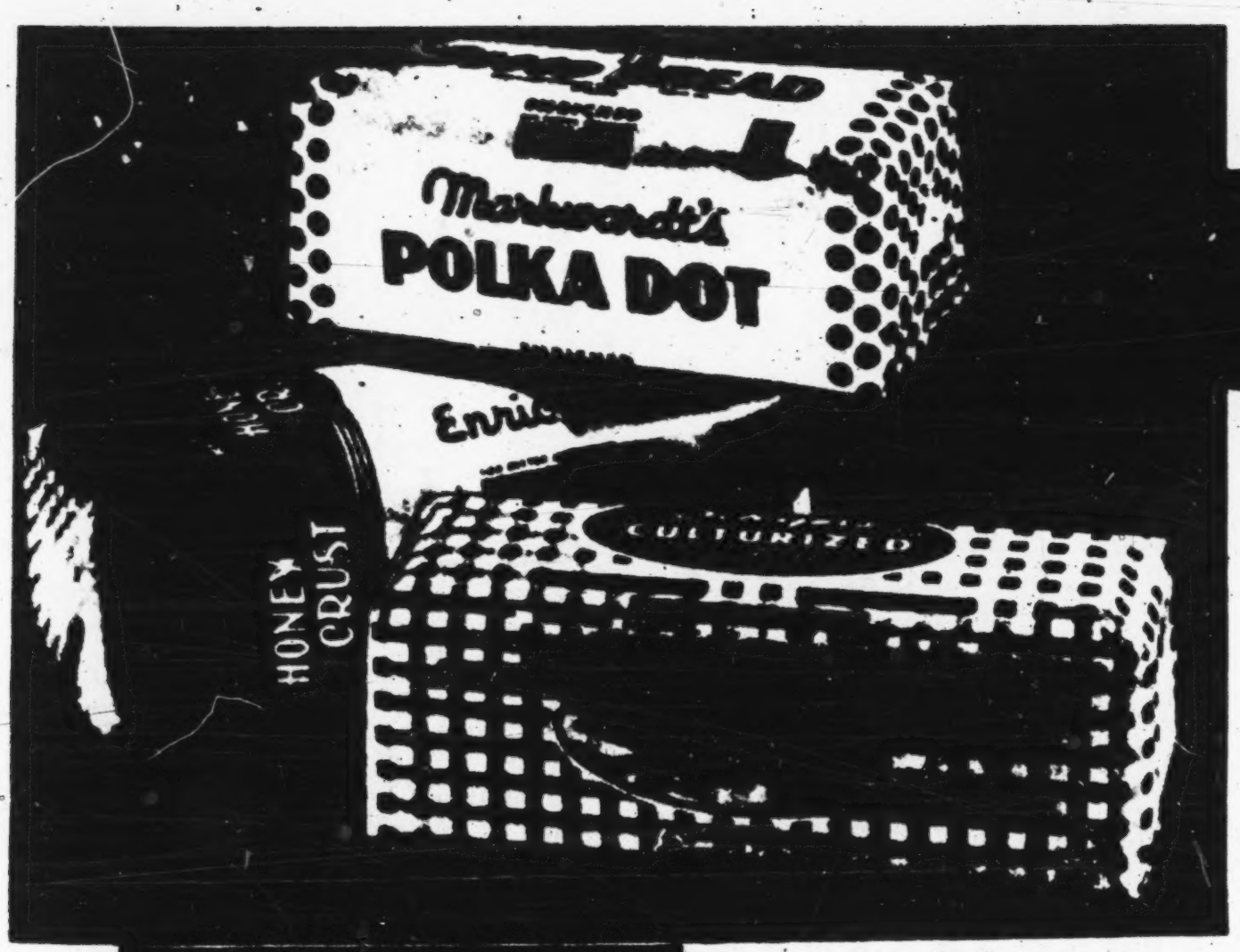
Defendant's Exhibit No. 69

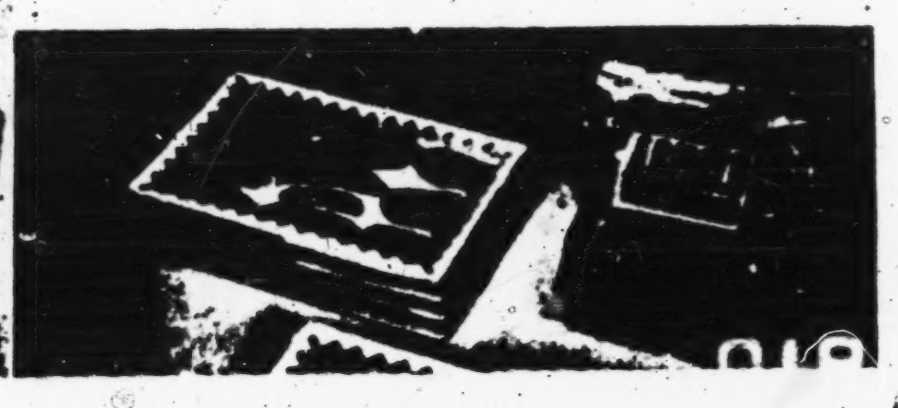
Defendant's Exhibit No. 70



BAKERY

THE INDUSTRY IS IMPROVING ITS PACKAGING, OVERCOMING TECHNICAL PROBLEMS, AS ITS COMPETITION GROWS KEENER

WAXED PAPER is backbone of white-bread packaging. It is least expensive, offers good all-around protection, is excellent for color printing. Trend is to plaids, polka dots. These wraps have new high-gloss wax-resin coatings.



OVERWRAPPED TRAYS and printed cellophane bags such as these attractive Arnold

PACKAGING

This year is probably the most important in the last five for the advancement of packaging in the baking industry. There is a growing realization among the country's more than 10,000 wholesale and retail bakers that in addition to being a protective covering to keep products fresh and clean today's baked goods package must have the kind of visual appeal that sells goods at the point of sale.

Packaging and product display will be one of the leading topics at the Baking Industry Exposition in Atlantic City, Oct. 15 to 20, where suppliers of many types of packaging materials and equipment will have their latest developments on exhibit. Studies of packaging materials are among the major current research programs of the American Institute of Baking and the Laminated Bakery Package Research Council.

Many factors are contributing to this intensified interest. Wholesale bakers are keenly aware of the need for better packaging to win acceptance among competitors on the store counters. Increasing use of pre-packaged baked goods by the self-service chain stores is spurring independent retail bakers to carry over this practice to their own shops, selling from display samples and doing the pre-packaging on the premises as a time-saving convenience to customers.

The trend to departmentalization of self-service stores, both chain and independent, is making the entire bakery industry realize that it must fight hard to keep its place in the modern food store. According to a study made by the Scott Paper Co., bakery products, including crackers, today occupy 9% of the space in dry grocery sections, ranking third after canned and dried vegetables (10%), soap and other household products (10%). The profit margin on bakery products in a supermarket is 21%, according to *Super Market Merchandising*, surpassed only by fresh produce (24%) and drugs (27.1%). But competition for store space is growing keener every year. Baked goods are threatened not only by many products such as prepared mixes, baby foods, pet foods, etc., that were virtually non-existent a decade or two ago, but from such growing new departments as frozen foods, prepackaged meats and produce, which are constantly winning more space in store planning.

Attractive packaging is essential in the light of such studies as the recent Du Pont surveys of consumer buying habits, showing that 40% of all baked-goods sales are decided in the store; that 67% of the cakes and cookies, 53.1% of the rolls, 35% of variety breads and 20% of the white bread are purchased on impulse—decisions made by shoppers after they are in the store and see the baked goods on display.

MODERN PACKAGING has queried a large number of leading bakers, trade associations and the bakery trade press to ascertain current packaging requirements and has questioned suppliers of packaging materials and equipment to find out what they are doing to meet those requirements. The report breaks down into two important factors: (1) trends in package selection and design to meet the essentials of better display and (2) improvements in packaging materials and methods of producing bakery packages.

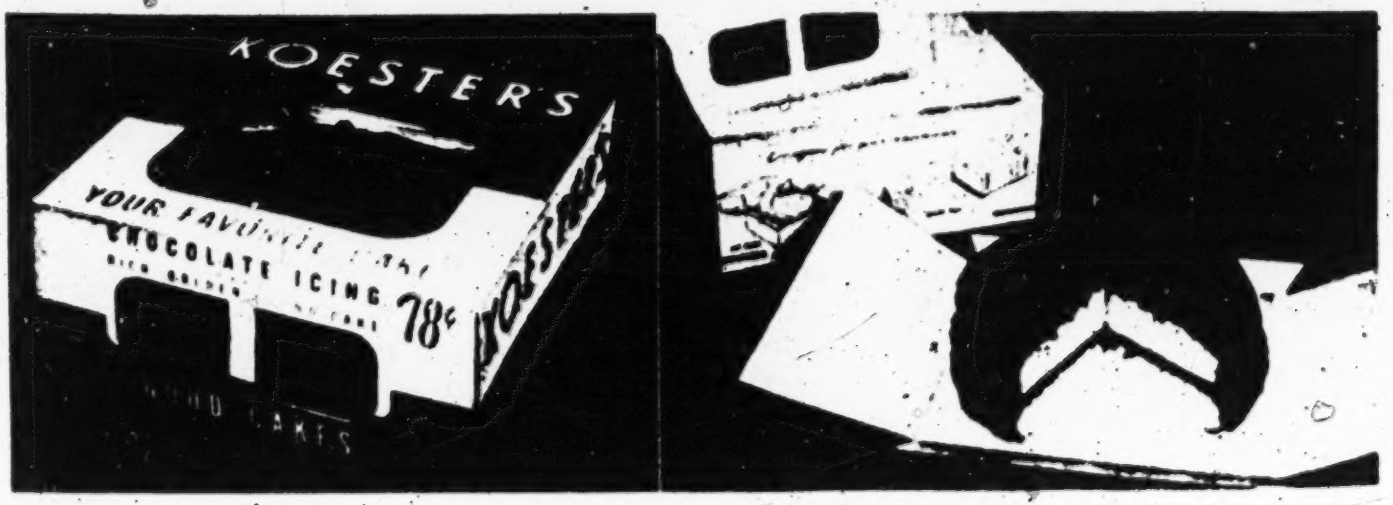
Appearance factors

Desire for more attractive packages is universal. In some quarters it is advocated that baking companies revise their traditional policy of charging all packaging costs to manufacturing expense and assign a portion of the cost to advertising and sales promotion. The desirability of transparent packages through which the consumer can see the product is recognized, and wherever the cost is within practical bounds the notable exception being white bread the transparent package is in great demand.

One large Midwestern baker says: "We use cellophane on practically all of our sweet-goods packages. If you can display your merchandise in packages in a transparent wrapper, you certainly have a better chance to get your share of the 67% of impulse sales."

Says George E. Snyder, editor of *Baker's Helper*: "More and more bakers are learning that their wrapper

REMOVABLE TRAY in this laminated window carton adds rigidity to sides of carton, makes cake easy to remove, prevents smudged icing. Unused cake may be put back in carton for storage. Directions for use are printed on box.



can be a useful sales tool. Many bakers are now employing a more judicious use of color. "Most new wrappers are being designed to make use of pastels, ginghams and other colors which are more attractive to consumers. To me this is a significant trend. Bakers are not relying on the owner, the sales manager and a few salesmen to pick the design and color of a new wrapper. They are getting ideas from clubwomen and other consumers and following their suggestions."

Better board surfaces

Almost unanimously bakers say that the protective function of packaging materials has been greatly improved. Much progress has been made toward the elimination of paperboard odors and tastes, they say, through surface laminations of glassine and waxed papers, and board coatings of new resin compounds.

Some of the largest bakers, including General Baking Co., are using a new coating on bakery trays, particularly for frankfurter and hamburger rolls, which is said to do everything a laminated tray will do at less cost. These coated trays are said to be odorless, moisture resistant and greaseproof. Some of the newer coatings contain Geon polyblend latex (B. F. Goodrich Chemical Co.), which is said to give exceptional grease resistance and moisture protection and to minimize undesirable board odor. Polyethylene (Du Pont Alathon) is used as an additive in a number of new coatings.

A box firm which has made more than a thousand tests of different materials claims it has hit upon a solution for a board coating using a specially developed wax formulation, in conjunction with polyethylene, which is non-toxic, odorless and grease resistant. The coating is said to be sufficiently pliable not to crack or blister and provides complete coverage of the board. Melting points are said to be sufficiently high so that the package will not break down on the heating plates of a wrapping machine.

High-gloss coatings for wraps

The trend in bread wrappings is definitely toward more gloss to give a better quality appearance. New, harder wax coatings combined with resins are giving new gloss to bread wrappers and other waxed opaque wraps. Several firms are specializing in papers with such coatings. For these also, polyethylene has been found in some cases to be a successful additive; because it improves the gloss and also helps to eliminate heretofore troublesome tackiness of microcrystalline blends. One of the suppliers, who will exhibit a new type wrap at the Bakery Show, says, "We do not make a practice of going overboard about new papers, but if we were inclined to do so, we would hit the water with a mighty big splash this time."

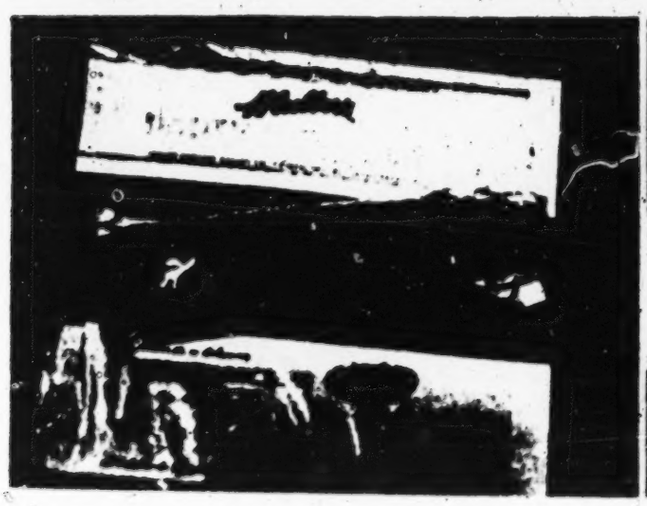
This new coating will provide a very strong seal—so strong you can tear the paper before it will give way. This coating also has exceptional rub resistance, does not readily collect dust, takes printing in the most satisfactory manner and will run on all standard packaging and bread-wrapping machines, requiring only that the thermostats be advanced to higher temperatures than for standard lower-melting-point waxes. It is higher priced than regular waxed paper, but in spite of this many bakers have adopted it and not one, it is said, has gone back to a regular sheet.

Machinery trends

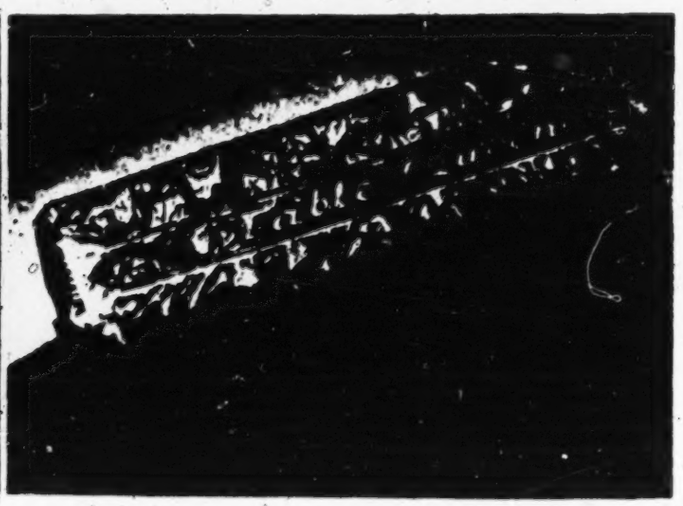
Fighting rising costs, all bakers are interested in packaging equipment which will help them save money. For bread wrapping there is intense interest in wrapping machines with electric-eye registration for more accurate positioning of designs. Many bakers, too, are interested in smaller models where speed is not so much a factor as improved package appearance. Equipment that can be changed over easily for wrapping a large variety of odd sizes and shapes of baked-goods items is also desired, particularly semi-automatic models for short runs. Many bakery products are still packaged by hand because no such equipment is available.

Important strides have been made in cartoning equipment. Of wide interest in mass-production operations is the use of the new automatic forming equipment for lock-tab trays or cartons, which are specially slotted and notched trays or boxes set up on automatic ma-

RECIPE SUGGESTIONS for Muller's Party Snack Rye, printed on back of a three-color cellophane bag wrap, have been a successful sales builder. Company says it has been good door opener for other products in the line.

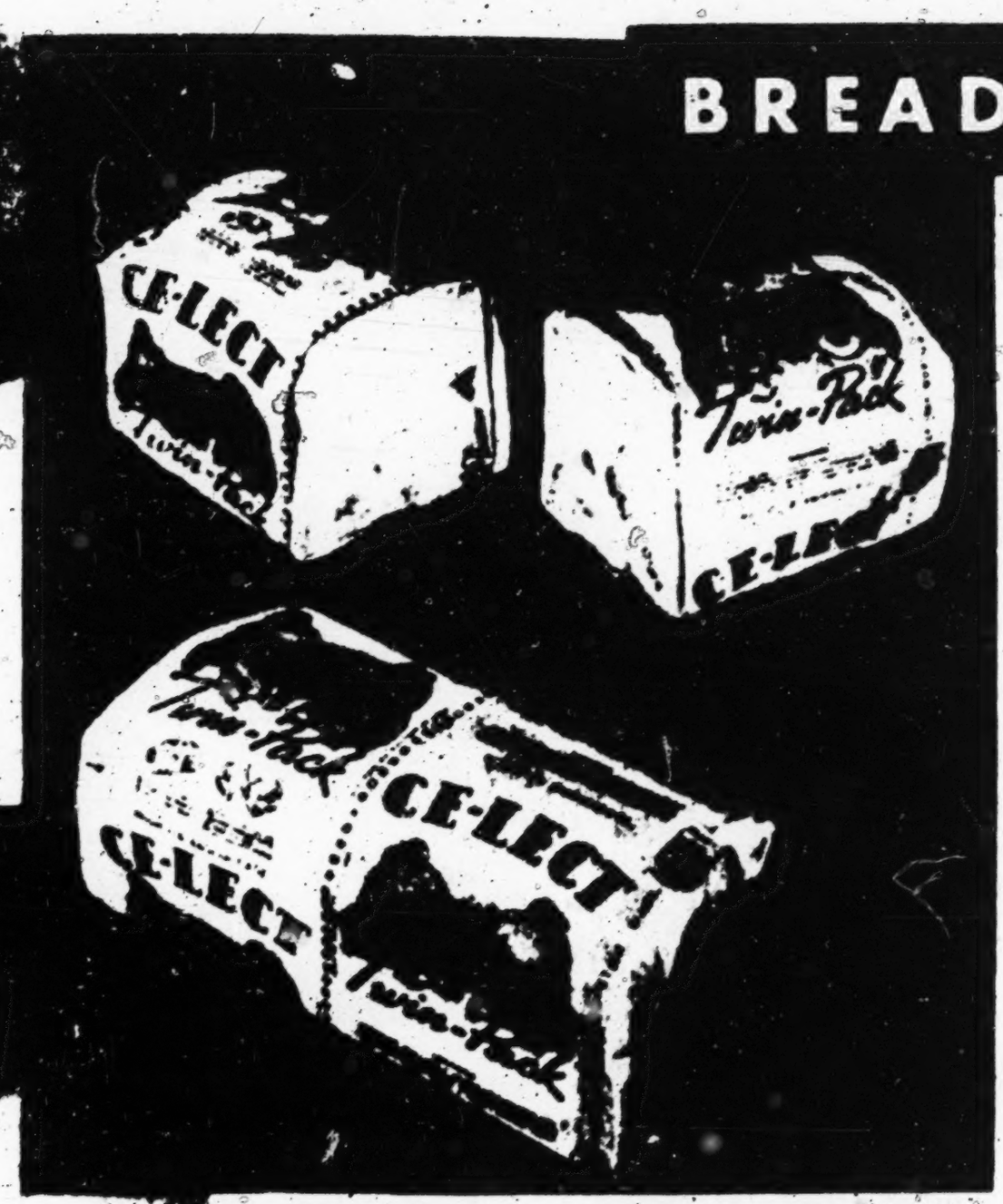


ACCURATE REGISTRATION is imperative for some of the new wraps such as this one of printed cellophane on enriched white bread. Design must always be positioned on loaf, whereas such accuracy is not required with repeating designs.



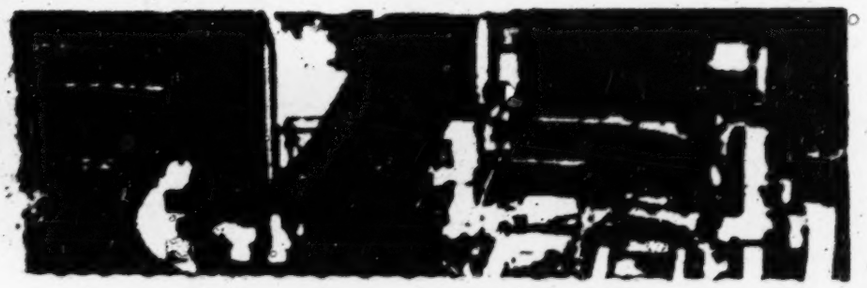
BREADS

PRINTED CELLOPHANE, preferred wrap for specialty breads, will be used even more extensively as bakers introduce new loaves to meet competition. Note use of a bag package for a round loaf of rye bread.

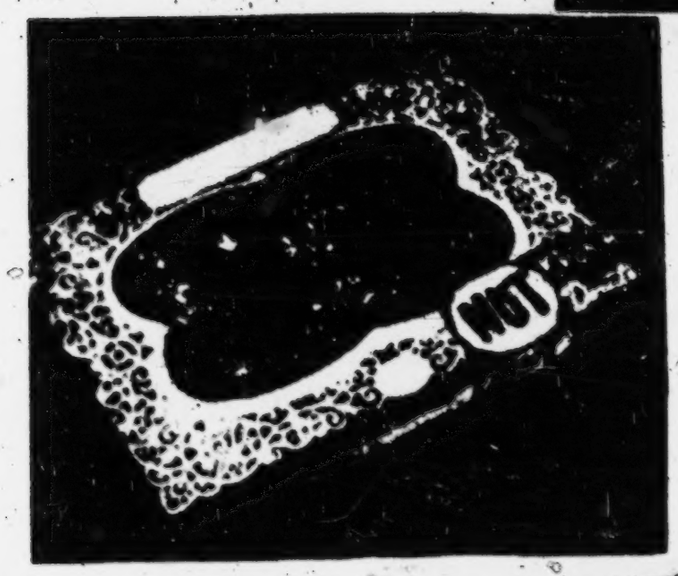


ZIPPER PACKAGE containing two half-loaves, individually wrapped, then over-wrapped and equipped with tear tape, has gained considerable acceptance. Baby twins on Ce-Lect wrap are a big hit in Boston.

HORIZONTAL design gives new interest to Arnold's Raisin Tea Loaf. Waxed paper and cellophane wrap has been changed to all-cellophane.



CORRUGATED pan liner of specially treated paper serves as consumer package, protects product, eliminates greasing and washing of baking pans.



ECONOMY, sales appeal, protection are offered by Town House carton with printed cellophane wrap.

FEMININE APPEAL is achieved by lace design for iced-nut doughnuts. PHOTO, DOUGHNUT CORP. OF AMERICA.

chines at the rate of 100 per minute and on hand-operated machines at the rate of 20 to 25 per minute. (See "Lock-Tab Tray," MODERN PACKAGING, Oct., 1947, p. 114.)

A striking new development is a cartoning machine for small pies and cakes, capable of handling from 60 to 165 pies per minute, recently installed in the Detroit and Chicago plants of Farm Crest Bakeries, Inc. These automatic machines provide a rigid package which can be stacked and handled conveniently without damaging the contents. The carton used is a conventional tuck type with lock and flaps for protection. The pie or cake may be seen through a rectangular transparent window. In operation, the pies are transferred by hand from baking tins to paper plates and placed in the conveyor buckets of the machine. The machine feeds the cartons from a magazine, but before opening them, prints the pie flavor on the end flap of the carton. This permits inventory of only one type of carton, obviating preprinted carton blanks for each flavor. After the carton is opened, the pies are gently inserted and both ends of the cartons are tucked. The finished packages are discharged to a belt conveyor from which they are removed for subsequent handling.

New high-speed machines for wrapping stacks of cookies with and without cards have had wide acceptance since the war. Until the advent of these machines most items—running into many millions annually—were wrapped and handled by hand.

New cellophane-bag-making machinery which can be operated on the baker's premises is playing an important part. Some of these machines can be equipped with a device for automatically applying thermoplastic labels and also an additional attachment for imprinting or coding the labels.

Coding devices in conjunction with rotary-type bag heat sealers are important in bakery packaging, particularly in large-scale chain operations where close control is kept of product freshness and the older stock is moved first.

Corning Corp.) is finding acceptance in bakeries as a useful agent in preventing a build-up of wax and plastic on heat-sealing surfaces of bread-wrapping machinery, causing frequent shut-downs. One bakery has reported it has been able to save eight man-hours a week. Using such compounds, bakers may now package part of their products in waxed paper and immediately change over to cellophane for a different item without stopping to clean wax from the heat-sealing equipment.

Specialties and their requirements

Specialties in baked goods require specialty packaging supplies.

Interesting is the heavy-gauge aluminum foil tray package that can be used as a throw-away baking pan for deep-dish pies and cakes, which formerly had to be baked in tins requiring a deposit. Several firms are reported using these containers very satisfactorily for baking cakes and fruit shortcakes. Also just coming on the market are foil-lined paper pie plates which can be used as baking pans. In the same category is a lithographed tin for fruit cake which is put right in the oven and sold in the same container without transfer. (See "Gift Trends," MODERN PACKAGING, May, 1949, p. 88.)

A firm which specializes in baking-pan liners is making a very attractive one of flexible corrugated material which can be used as a colorful consumer package. Introduced two years ago, such pan liners have won tremendous popularity for all sorts of rolls and sweet goods. They eliminate costly greasing and washing of pans. The same principle has been used for cake liners for many years, but only recently has a liner been produced with the proper coating to give a good bottom bake. The patent-applied-for coating has made baking and packaging in a liner practical for large wholesale bakers.

Norma Baking Co. of Trenton, N. J., is using a new type of cookie bag comprised of a heavy sheet of printed paper on the outside with an inner laminated sheet of glassine and aluminum foil. This combination, it is said, provides a barrier with excellent moisture protection, prevents breakage of the package by the sharp edges of such items as oatmeal cookies and supplies an interesting printing surface for brand and product promotion. A tin-tie closure permits the housewife to open and reclose the bag, thereby protecting freshness of the contents throughout its use in the home.

For use as a divider or protective pad in boxed assortments of cookies or small cakes, one supplier is offering a very attractive greaseproof embossed parchment sheet. Because of its extreme whiteness and protective qualities, it has many advantages for specialty items and is said to be economical in comparison with similar products of other materials.

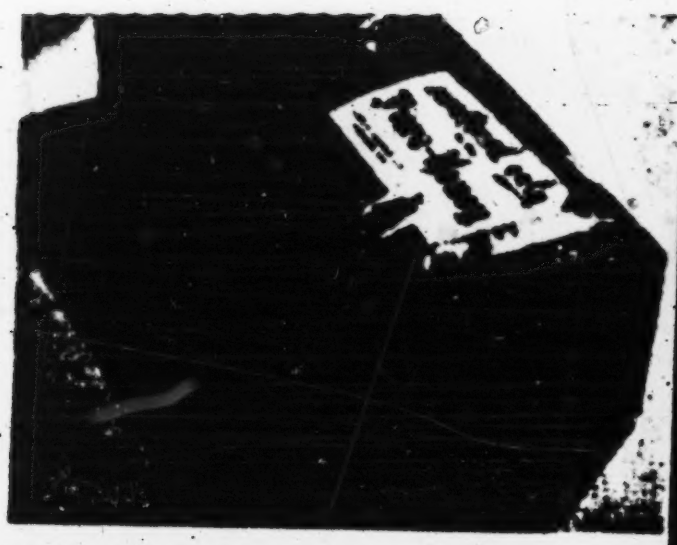
Embossed glassines, which come in stock designs or may be made with trademarked designs, are very interesting for interior greaseproof packaging where something more decorative than ordinary waxed paper or glassine is required.

Rolls and sweet goods

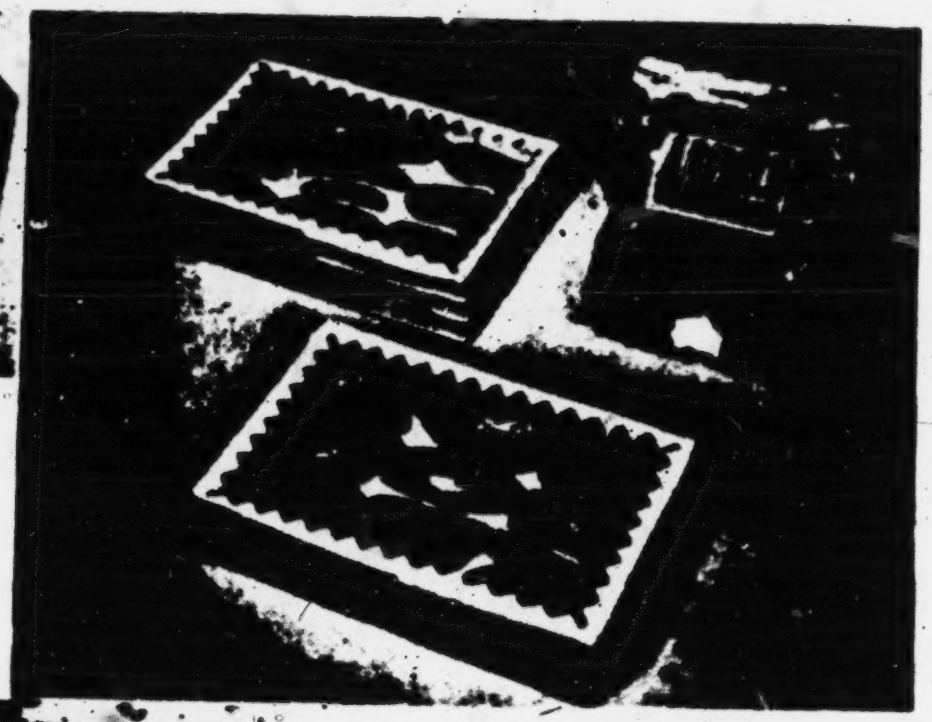
One of the most noteworthy trends is the tremendous growth and improved design of printed cellophane overwrapped-tray packages, window boxes and transparent bags for the packaging of fresh rolls and sweet goods. In years gone by the average household didn't have rolls or cinnamon buns as part of the daily diet unless Mom made them herself or stopped at a bake shop. Now they are almost a daily shopping item in the gro-

The bakers have plenty of tricks in the bag

dots. These wraps have new high-gloss wax-resin coatings.



BREAD FORMULA and this exclusive cellophane and waxed paper wrap are offered together, only one baker to a community.



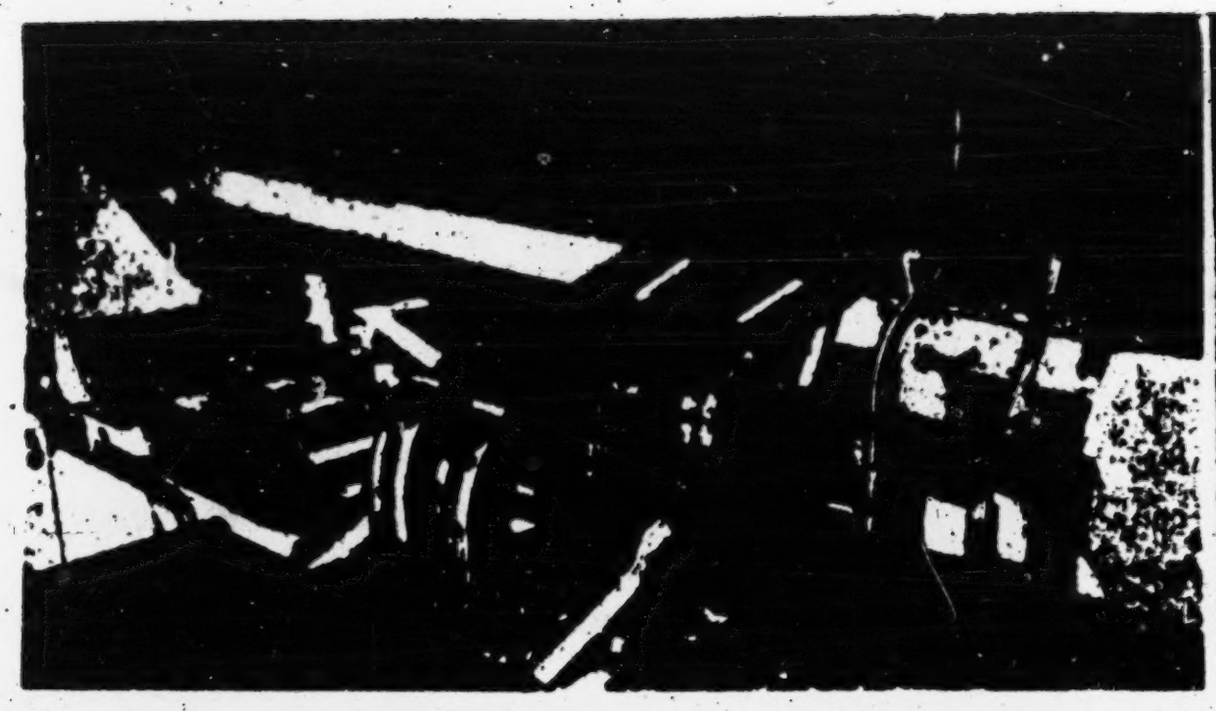
OVERWRAPPED TRAYS and printed cellophane bags such as these attractive Arnold packages make fresh rolls a daily shopping item today.

PIE CARTONING at the rate of 165 per minute is possible on this new machine at Farm Crest Bakeries, Inc. It sets up cartons, imprints pie flavors, fills and delivers packages.

ALUMINUM TRAY PACK in pint and quart sizes becomes a baking pan for cakes and shortcakes used by Floyd Armistead, Chicago retail baker. Pans eliminate greasing and flouring, provide inexpensive throw-away which consumer does not have to return. They are an innovation for the handling of specialties containing juices.

Modern Packaging

M 5238 October 1949



LOOSE COOKIES had to be wrapped by hand until the advent of machines such as this, which will wrap two cookies to 20 cookies on a flat card with label applied. Some models of the machine will wrap single stacks without a card.

STACKED PACK of Nabisco's Fig Newtons, placed three across and two deep, wrapped in printed celloph makes a more attractive package than the one formerly used, which had the Fig Newtons placed in single file.

OLD AND NEW wraps for one of American Bakeries Co.'s newest packages. The realistic, full-color photography has strong appetite appeal.

cery store, along with the regular shopping—all due to packaging which keeps them fresh and makes them irresistible on the counter.

Bread wrappers

Waxed paper is still the backbone of packaging for white breads, the major volume item of the industry. It is the least expensive and provides an excellent surface for color printing and eye-appealing design, so imperative for this highly competitive field.

More cellophane will be used for breads, however, according to leaders in the field, because increased competition always means more new specialty and premium breads. Cellophane is today the preferred wrap for specialty loaves. Printed glassines as wrappers for specialty breads are being used quite widely in the South and in some Western sections. Serious consideration is being given to greater areas for brand identification on cellophane packages. The ultimate, of course, is a full-color printed cellophane wrap, but sometimes, because of short runs and high cost, this is

advantages. But it appears more and more definite that for any mass-market bread, on which profits may be figured in fractions of a cent per loaf, cost of the wrap will be the deciding factor.

According to sources in the baking trade, prices based on 120-roll (approximately 5,000-lb.) quantities, figuring a yield of sheets 15 by 18 in., compare roughly as follows:

Printed cellophane	$9.35	per	thousand	loaves
Plain cellophane with 3-in. printed paper band	7.55	"	"	"
Printed plastic-coated glassine	7.00	"	"	"
Printed opaque waxed paper	4.60	"	"	"

The new special hard gloss wax coatings add about 10 to 15 cents per thousand loaves to the cost of the printed waxed paper wrap.

On the average, packaging costs for bakery products run about 6 to 7% of total costs, but practically all leaders in the industry say that packaging materials are 40 to 50% higher than they were before the war. This naturally means careful planning to get the best possible package for the money and with the least amount of labor.

In the testing stage

"Hot-wrapped bread" is one of the newer tricks—so new that the company which discovered the method is not yet ready to release details. Through new techniques, this procedure is (*Continued on page 200*)

Toy vending machine 'sells' penny Hersheys

An ingenious toy and at the same time an unusual promotion for a packaged product is the Hershey Bar Bank, a miniature vending machine from which youngsters can buy their own 1-cent Hershey Milk Chocolate bars. The bank, designed and manufactured by G. Felsenthal & Sons, Inc., Chicago, not only affords a home-supervised source of wholesome candy, but also encourages children to save, inasmuch as they make a "profit" of 5 cents on each 21-bar supply of "bank-sized" Hersheys.

When the last bar has been removed, the metal back of the bank may be unlocked and taken off, permitting removal of the cash drawer and refilling of the two 12-bar vending compartments. Since the refills for the bank sell for 19 cents at retail, sweet-toothed youngsters realize monetary as well as gustatory rewards from its operation.

[illegible]

available only from standard vending machines, have an inner parchment wrap and the standard printed sleeve-type label. The 24-bar packages will also be sold as refills by department stores and specialty shops handling the banks.

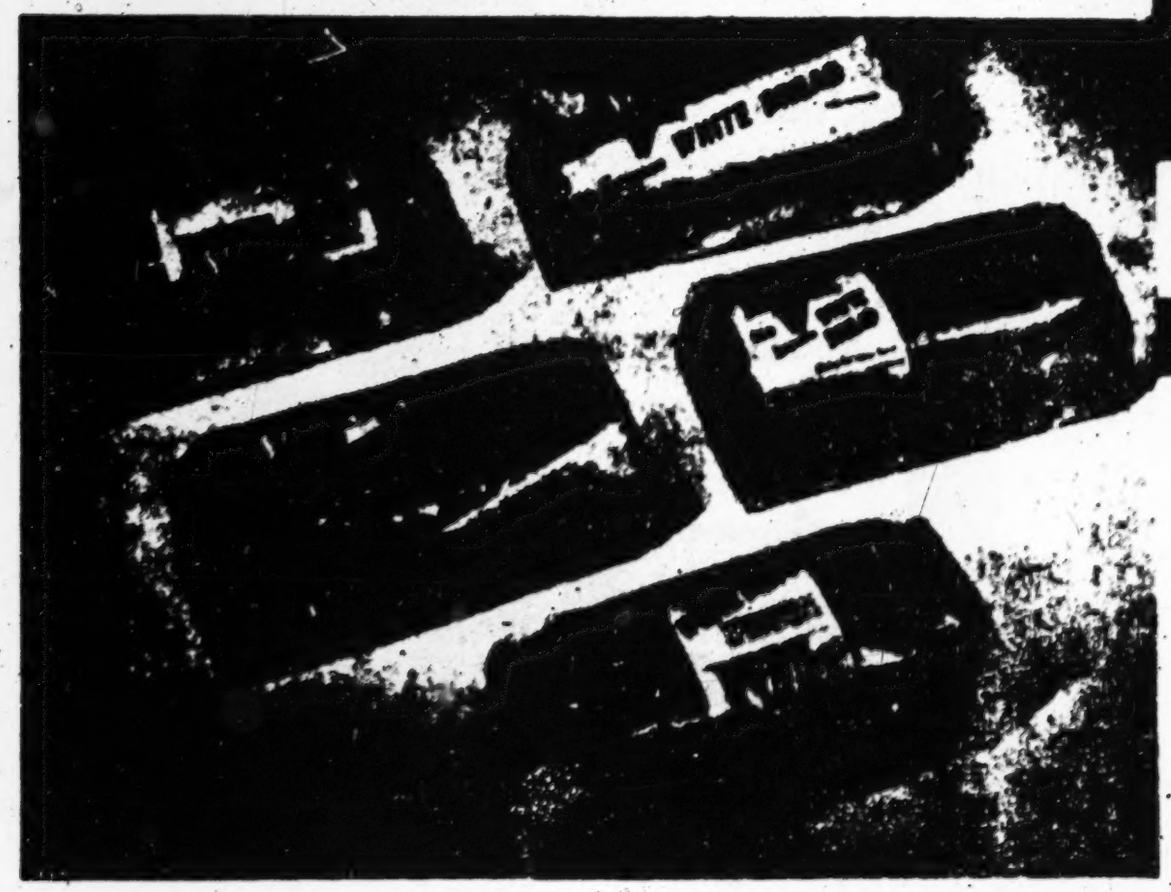
CREDITS: *Lustrex polystyrene for bank, Monsanto Chemical Co., Springfield, Mass. Polyflex styrene sheeting for windows, Plax Corp., Hartford, Conn. Folding boxes for 24 "bank-sized" Hershey bars, Lebanon Paper Box Co., Inc., Lebanon, Pa. Parent carton for bank and bars, Ace Carton Corp., Chicago. Shipping containers, Stone Container Corp., Chicago.*

REFILL of "bank-sized" chocolate bars is packed in carton with bank and also is sold separately.

sign gives new interest to Arnold's Raisin Tea Loaf. Waxed paper and cellophane wrap has been changed to all-cellophane.

ZIPPER PACKAGE containing two half-loaves, individually wrapped, then over-wrapped and equipped with tear tape, has gained considerable acceptance. Baby twins on Ce-Lect wrap are a big hit in Boston.

PROGRESSIVE DESIGN suggestions for retaining brand identity. At top, bold effect of printed opaque wrap. Next, wide wrap-around band under clear cellophane wrap. Second row, printed cellophane wrap; next to it, a suggestion for off-center treatment when unprinted cellophane is used. Bottom, conventional inside label, which some bakers say does not have sufficient brand impact.



FOR CINNAMON TOAST, Hauswald's Bakery slips a heat-sealed glassine packet containing cinnamon and sugar between the two halves of a twin-type bread wrap—a premium feature in Baltimore, where more twin-packs are sold than any other place.

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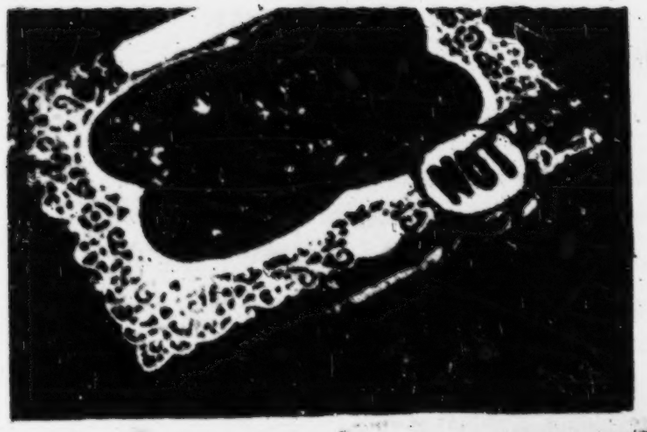


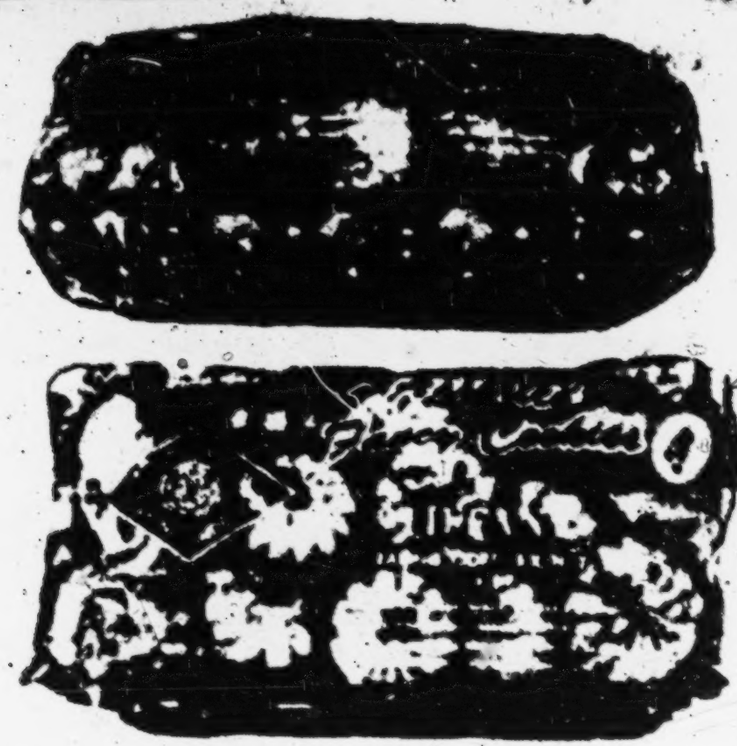
Town House carton with printed cellophane wrap.

FEMININE APPEAL is achieved by lace design for iced-nut doughnuts. PHOTO, DOUGHNUT CORP. OF AMERICA.

operated on the baker's premises is playing an important part. Some of these machines can be equipped with a device for automatically applying thermoplastic labels and also an additional attachment for imprinting or coding the labels.

Coding devices in conjunction with rotary-type bag heat sealers are important in bakery packaging, particularly in large-scale chain operations where close control is kept of product freshness and the older stock is moved first.

A new silicone resin product (DC-7 Compound, Dow



PAPER BASKET with red and white printed cellophane, hand wrapped, is first package for Tiffany Baking Corp. It came out in May. After two weeks, jobbers and brokers were phoning to obtain it. The company expects eventually to produce it automatically.

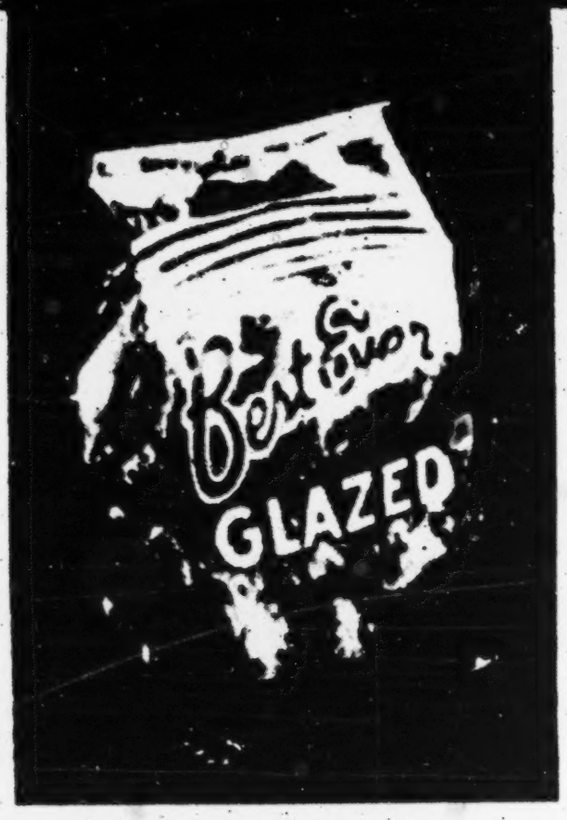
PIES are snacks when put in counter merchandisers that can take their place beside candy bars and other confections.

M 5238

goods. They eliminate costly greasing and washing of pans. The same principle has been used for cake liners for many years, but only recently has a liner been produced with the proper coating to give a good bottom bake. The patent-applied-for coating has made baking bags for the packaging of fresh rolls and sweet goods. In years gone by the average household didn't have rolls or cinnamon buns as part of the daily diet unless Mom made them herself or stopped at a bake shop. Now they are almost a daily shopping item in the gro-

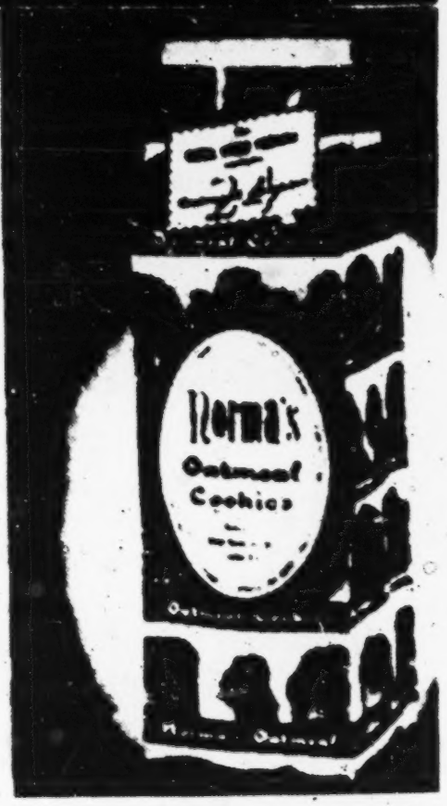
The bakers have plenty of tricks in the bag

FREE SAMPLES stimulate the interest of consumers in the product. These packets for Kay's Cookie Co., Memphis, are almost exact miniatures of sales package in center of photo.



CELLULOSE ACETATE, because of its "breathing" properties, is said to protect the surfaces of these glazed doughnuts.

BACK-TO-BACK packaging provides visibility of upper surfaces of rolls on both sides of bag. Turned-over bottom closure is resealable.



FOIL-LAMINATED cookie bag is moisture barrier; sharp edges of cookies do not cut through bag.

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CALLEN BAKING CO. | SALESMAN: J. A. PIE' | DATE LAST REPORT: 3/9/49

1500 Graham Ave. | DATE: 10/13/49 | CONTROLLED BY | PURCHASING AUTHORITY

Windber, Penna. | CLASS: 1-12 | INDUSTRY: Baking

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., NT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	3,000		-					

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	W. L. CHGE
Walter E. Callen	Pres.	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727 A — R-ROLLS S-SHEETS C-CONVERTED

1. (a) Re "Mammoth" white loaf inCellophane - Used "Design for Decision."
   (b) Du Pont Service - Used Consumer Ad 11-49.

2. (a) Feels there is market for Wax and Cellophane wrapped bread. Believes he gets both markets with his two white loaves - one in Cellophane, one in wax.
   (b) Liked Ad. Will discuss with drivers. If they want to use will get in touch with us!

3. Bread volume has dropped 35%, cake and sweet doughs down approximately 60% due to strikes.

OCT 2

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Defendant's Exhibit No. 71

OLD AND NEW wraps for one of American Bakeries Co.'s newest packages. The realistic, full-color photography has strong appetite appeal.

PACKAGE DISPLAY is carried right to the consumer's home by these new windowed route trucks adapted by Hauswald's Bakery, Baltimore.

premium breads. Cellophane is today the preferred wrap for specialty loaves. Printed glassines as wrappers for specialty breads are being used quite widely in the South and in some Western sections. Serious consideration is being given to greater areas for brand identification on cellophane packages. The ultimate, of course, is a full-color printed cellophane wrap, but sometimes, because of short runs and high cost, this is impractical. Many bakers are studying ways to increase the area of the wrap-around bands to get greater display. Sometimes this can be achieved by placing a slightly wider band off-center, thereby achieving slightly greater area and avoiding the effect of dividing the loaf surface in half.

An interesting design innovation by Red Owl Stores is the placing of printing so the bread may be stacked vertically, reducing the crushing of loaves. (See "Powerful Owl," MODERN PACKAGING, Aug., 1949, p. 88.)

The twin-type bread package two sealed packages in one overwrap, promoted as a means of keeping half the loaf fresh while the other is consumed—has gained wide favor in some areas. Well developed special machinery is available for making this patented pack.

In Baltimore the Schmidt Baking Co., one of the early developers of a twin-type zipper pack, is using somewhat similar equipment for what they call "unit packaging" - half loaves as single-unit packages for specialty dark breads as well as white.

The argument over relative merits of transparent and opaque bread wraps continues. Each has its

45

M 5238

thal & Sons, Inc., Chicago, not only affords a home-supervised source of wholesome candy, but also encourages children to save, inasmuch as they make a "profit" of 5 cents on each 21-bar supply of "bank-sized" Hersheys.

When the last bar has been removed, the metal back of the bank may be unlocked and taken off, permitting removal of the cash drawer and refilling of the two 12-bar vending compartments. Since the refills for the bank sell for 19 cents at retail, sweet-toothed youngsters realize monetary as well as gustatory rewards from its operation.

The bank housing is molded of "toy red" polystyrene plastic, with the working parts and removable coin drawer of clear transparent polystyrene. Windows in the front are preprinted and cut from extruded polystyrene sheeting, cemented in position.

The completed banks are packed in brown and yellow printed folding cartons carrying an illustration of a boy and girl operating one of the banks. The other side panels list the operating features of the toy and include the Felsenthal name as manufacturer and distributor. The name "Hershey Bar Bank" appears prominently.

Also placed in the carton is a special box containing two dozen of the miniature Hershey bars, which serve as the original supply for the bank. The bars themselves, which in the past have been

CREDITS: *Lustrex polystyrene for bank, Monsanto Chemical Co., Springfield, Mass. Polyflex styrene sheeting for windows, Plax Corp., Hartford, Conn. Folding boxes for 24 "bank-sized" Hershey bars, Lebanon Paper Box Co., Inc., Lebanon, Pa. Parent carton for bank and bars, Ace Carton Corp., Chicago. Shipping containers, Stone Container Corp., Chicago.*

REFILL of "bank-sized" chocolate bars is packed in carton with bank and also is sold separately.

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M 5238

PRINTED labels . . . precision-produced on new presses, new finishing equipment . . . with every step closely supervised by old hands at meeting the most exacting demands of scores of label buyers.

Bakery packaging

(*Continued from page 99*) said to permit the wrapping of the bread while it is still hot and thus seal in freshness of flavor and aroma. Heretofore, all bread had to be cooled to about 98 deg. F. before the baker could start packaging.

The bakery industry is also watching the recent development of pressure-sensitive waxed paper, said to seal without the aid of heat (see MODERN PACKAGING, Sept., 1949, p. 180). Introduced a year ago in household roll form, this new paper has been used widely in the home for wrapping sandwiches, left-overs, etc. Now the makers are giving serious study to its use in the bakery and many other fields of commercial packaging.

The bakery industry is a complex business today with its many types of outlets—chain store, independent store, retail bake shop, route deliveries, etc.—but wherever the question of packaging is raised, whether with the president of the company or a house-to-house route salesman, the answer is that attractive packages are a potent factor in boosting sales. Today's package suppliers, equipment manufacturers and designers are aware of this need and are ready with solutions for hundreds of specific packaging problems in the bakery field.

CREDITS: *Markwardt's "Polka Dot," Schafer's Culturized Potato White Bread and Honey Crust resin-coated, waxed paper wraps, Kalamazoo Vegetable Parchment Co., Parchment, Mich. Honey-Scotch, Arnold and specialty-bread group wraps, Milprint, Inc., Milwaukee, Wis. Ce-Lect wrapper, Nashua Gummed & Coated Paper Co., Nashua, N. H. Duplex wrapping machine, American Machine & Foundry Co., New York. Hauswald wraps, Pollock Paper Corp., Waterproof-Ohio Div., Columbus, Ohio; cinnamon-sugar packets of Riegel glassine, packed by Cumberland Packing Corp., Brooklyn. Spaulding cellophane wrap, Sylvania Div., American Viscose Corp., New York; printed by Milprint, Inc. Mueller's Party Snack rye wrap and Kay Cookie Co. bags, The Dobeckmun Co., Cleveland, Ohio. Best-Ever glazed doughnut bag made of Celanese Corp. of America Lumarith by The Dobeckmun Co. Pioneer Fried Pies display container, The Bradley Gilbert Co., Louisville, Ky. Farm Crest pie cartoner, R. A. Jones & Co., Inc., Cincinnati.*

CELLOPHANE TRADE REPORT - DIRECTOR OF SALES COPY

DUPONT

FIRST CALL ☐

CUSTOMER		SALESMAN	DATE LAST REPORT
GENERAL BAKING COMPANY		R. A. Dunn	9/27/49
ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY	
420 Lexington Avenue	10/24/49		
CITY-ZONE-STATE	CLASS	INDUSTRY	
New York City	1-36	Mr.-Cake	

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	270-M	Sylvania	Direct	MS-1	120-M	60-M	120-M	120-M
Milprint	45-M							
Paramount	6-M							
Crystal	25-M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
Porter Tilney - VP Dir.	Purch.	X		
L. G. Deal	Buyer	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-12727 A

* R-ROLLS S-SHEETS C-CONVERTED

1a) Fischer's Pantry Leaf and "Design for Decision" to J. V. Adamson.

b) Moisture-proofness test -- wax paper vs. cellophane to P. Tilney as requested.

2a) Mr. Adamson out of town.
b) Grateful for information.

3. Mr. Tilney volunteered Comparative Cost data (see second page of report) chart re wax, cellophane, pliofilm P-6, Visqueen, du Pont Polythene and Reynolon -- showing gauge, yield, lb. cost, cost per 1-M wr wrappers and wraps per lb., based on 15" width roll, with 13" cut-off. Hoped we could supply sample roll of Polythene 100 gauge to check machine operation wit Visqueen's 1 mil film.

CONVERTED AMF Wrapper -- this machine has been converted for Goodyear Rubber for Pliofilm wrapping and is being shipped from Akron to Gen. Mkg plant in Jersey City for testing machine wrap of Pliofilm's P-6, Visqueen, Polythene and Reynolon as they feel machine to wrap Pliofilm can also handle Polythenes. Mr. Deal believes machine has oscillating heaters. He felt now wouldn't be propitious time for our wehine section man to visit Jersey City.

M 1096 Material

Defendant's Exhibit No. 72

4318

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R-12727-B

DU PONT

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER

GENERAL BAKING COMPANY (cont'd)

SALESMAN

ST AND NO

DATE

CITY-ZONE-STATE

CLASS

BUSINESS TREND -- Last month showed unaccountable sharp drop in business. Strikes partially contributory.

5a) F. W. Tranfield -- Following is Comparative Cost Data Chart.

TYPE FILM	GAUGE THICKNESS	SQ. IN. PER LB	COST PER LB.	COST PER M WRAPS 15 x 18	WRAPS PER LB. 15 x 18
Waxed Opaque	37-1/2#	11,520	0.1933	$ 4.52	$ 42.7
Cellophane 300 MST	.0009	21,000	.48	6.18	77.7
Pliofilm P-6	.00075	31,000	1.00	8.71	114.81
Visqueen	.001	30,000	.95	8.55	111.11
Polythene	.0015	20,000	.80	10.80	74.07
Reynolon	.0015	13,500	1.13	22.60	50.00

M 1096

DU PONT

CELLOPHANE TRADE R 'ORT - DIRECTOR OF SALES COPY

LAST CALL

CUSTOMER		SALESMAN	DATE LAST REPORT
	WM. FRIEHOFER BAKING CO.	J. S. TAYLOR	11/4/49
STREET AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY	
	Penna. Ave. & Lincoln St. 1/4/50	Wm.Friehofer, Allentown	
CITY, ZONE, STATE	CLASS		INDUSTRY
	Wilmington, Del. 1-12	Allentown	Baking

DU PONT CELLOPHANE		COMPETITIVE MATERIALS							
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT MT CA ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR PUR	REPORT CALL BELOW
DU PONT									SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M E CNGE
R. J. Wolf	Plt.Mgr.	X	M	X
Wm. Friehofer	Donut Mgr.	X	M	X

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM CODE	R S	ANTICIPATED
White Bread	20M	MST-51	R	100
Old Fashioned	0	"	R	100M
Rye	4M	"	R	4M
Whole Wheat	4M	"	R	4M
Raisin	3M	"	R	3M
Donuts	2M	LST-MST Wind.Carton	C	2M
	33M			213M

1. Sales volume "Old Fasioned" loaf since return to transparent wax.

2. Mr. Wolf said total volume off slightly from last year so far as this plant is concerned. Subject explained that when they switched Old Fashioned loaf from transparent wax to Cellophane it was a bigger seller than "Sonky Boy" loaf. After switch "Sonny Boy" (20% Cellophane from down state routes - 80% wax) moved ahead of Old Fashioned. Since return to transparent wax on Old Fashioned it has again taken the lead from Sonny Boy. As a result they feel transparent wax best for Old Fashioned loaf. Undecided re continuance Cellophane on Sonny Boy for down state routes.

3. Discussed our recent retail survey covering retailers' feeling re Friehofer package changes. Stressed opinion retailers that Cellophane a better package than transparent wax and feeling that advertising and time needed to educate consumers to package change on loaf such as Old Fashioned. Subject said felt 8 week trial suffisient time and management of opinion package change should stimulate sales without additional expenditures in advertising. Wolf agreed they have probably created some confusion in minds of regular customers with numerous package changes but feels

M 1105

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Defendant's Exhibit No. 73

N-12727

CELLOPHANE TRADE R 'ORT - PAGE 2

CUSTOMER

WM. FRIESHOFER BAKING CO.

SALESMAN

J. S. TAYLOR

ST. AND NO

DATE

1/4/50

CITY-ZONE-STATE

Wilmington, Del.

CLASS

progress has been made and groundwork laid for better all around merchandising of their products.

Mr. Friehofer says donut packaging considerably improved. Now using MST window boxes - perforated. Had reports of stealing on one day's production but says this probably due to mixup in their plant and use of window cartons used last summer - CA windows.

M 1105

EXTRACT FROM "MARKET SURVEY REPORT NO. 16 -- USE OF CELLOPHANE IN THE CANDY INDUSTRY"

AUGUST 1931.

MARKET SURVEY REPORT #16

USE OF CELLOPHANE

IN THE CANDY INDUSTRY

AUGUST - 1931

I - OUR PRESENT STATUS IN THE CANDY INDUSTRY.

We must look at the Candy Industry thru a microscope - not rose colored glasses. It was a user of Cellophane before the Du Pont Company started manufacturing Cellophane. It still remains one of our biggest potential fields for more business.

Two things must be before us constantly.

1. The candy manufacturer has used Cellophane for so long, he thinks he knows all about it. He does not, and this survey will show why.

2. We ourselves, must not think the Candy Business is saturated and can use no more Cellophane, than in use at present.

OUR POTENTIAL IN THE CANDY FIELD IS 20% MORE THAN IN THE ENTIRE CIGARETTE INDUSTRY.

Based on our present sales, we are doing but 50% of a conservative, estimated potential. THIS MEANS THERE IS TWICE AS MUCH BUSINESS FOR US ON THE PRESENT CANDY OUTPUT.

The candy field is not standardized -- it is changing rapidly - competition is changing conditions and distribution. We must individually keep abreast of these conditions, especially because they open the way for a greater Cellophane volume.

New developments in machines and fabrication, lower prices, new merchandising methods, new outlets and a host of other influences are working in our favor in this industry. We must take advantage of them.

Even the oldest users in the Candy Field are still vitally interested in new possibilities for Cellophane.

Our job for the future is specialized along certain lines and in this report we are endeavoring to show just what we must do to get definite results.

II - OUR PROGRESS TO DATE

Our history in the candy field is most interesting.

Tracing up from the old days in 1924, we find the following Cellophane packaging sequence down to the present in 1931.

1. Straight overwrap on boxed chocolates was the first use.

2. Some here and smaller units then appeared in P. T. Cellophane, replacing other wraps.

50 Church St., Montclair, N. J.

PRINTED labels . . . precision-produced on new presses, new finishing equipment . . . with every step closely supervised by old hands at meeting the most exacting demands of scores of label buyers. These are chief among the many reasons why we belong high on your list of dependable label sources. Why not know *all* the reasons? Reach now for your telephone, or dictate a short note to us.

John Maher Printing Company

Label Division

2001 CALUMET AVENUE

CHICAGO 16 • Victory 2-0300

100

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CREDITS: *Markwardt's "Polka Dot," Schafer's Culturized Potato White Bread and Honey Crust resin-coated, waxed paper wraps, Kalamazoo Vegetable Parchment Co., Parchment, Mich. Honey-Scotch, Arnold and specialty-bread group wraps, Milprint, Inc., Milwaukee, Wis. Ce-kect wrapper, Nashua Gummed & Coated Paper Co., Nashua, N. H. Duplex wrapping machine, American Machine & Foundry Co., New York. Hauswald wraps, Pollock Paper Corp., Waterproof-Ohio Div., Columbus, Ohio; cinnamon-sugar packets of Riegel glassine, packed by Cumberland Packing Corp., Brooklyn. Spaulding cellophane wrap, Sylvania Div., American Viscose Corp., New York; printed by Milprint, Inc. Mueller's Party Snack rye wrap and Kay Cookie Co. bags, The Dobeckmun Co., Cleveland, Ohio. Best-Ever glazed doughnut bag made of Celanese Corp. of America Lumarith by The Dobeckmun Co. Pioneer Fried Pies display container, The Bradley Gilbert Co., Louisville, Ky. Farm Crest pie cartoner, R. A. Jones & Co., Inc., Cincinnati, Ohio. Kern's hamburger roll bag, Nabisco Fig Newton wrap, Strietmann cookie wrap, Shellmar Products Corp., Mt. Vernon, Ohio. American Bakeries Co., Merita wrap, U. S. Printing & Lithograph Co., Cincinnati, Ohio. Koester's cake carton, Marathon Corp., Menasha, Wis. Tiffany Baking Co. wrap, Crystal Transparent Corp., New York; paper basket, Harvey Paper Products Co., Sturgis, Mich. Norma foil-laminated cookie bag, Kehr Paper Products Co., Philadelphia. Corrugated pan liners, Sherman Paper Products Corp., Newton Upper Falls, Mass. Aluminum tray pack used by Floyd Armistead, Reynolds Metals Co., Richmond, Va. Metal fruit-cake box, Atlantic Can Co., New York; wrap-around label, Tompkins' Label Service, Philadelphia.*

Special acknowledgment to: Gordon Cartons, Inc., Baltimore, Md.; Willhauer Paper Box Co., Spartanburg, S. C.; Western Waxed Paper Co., Los Angeles, for information on coatings. Stokes & Smith Co., Philadelphia; Lynch Corp., Package Machinery Div., Toledo, Ohio; Doughboy Industries, Milwaukee, Wis.; Simplex Machine Co., Oakland, Calif., for information on machinery. George H. Sweetnam, Inc., Cambridge, Mass., for information on decorative embossed parchment. E. W. Twitchell, Inc., Philadelphia, for information on embossed glassines. Sutherland Paper Co., Kalamazoo, Mich., for information on foil-lined Bake-A-Pie plates.

M 5238

3. Seasonal and holiday goods in P. T. and colors came next.

4. Candy novelties in Cellophane followed. These were formerly bulk goods.

5. BARS AND SMALLER UNITS IN M. T. CELLOPHANE, replacing other wrappers, appeared when this material was first brought on the market in 1927.

6. Bag units of smaller varieties, formerly in bulk and glass.

7. Hard candies and mixtures in two-wall and Duplex bags, formerly in glass and bulk.

8. Boxes formerly hand wrapped were machine wrapped.

9. Varieties of all kinds in machine wrapped boats, which were formerly packed in bulk or glass.

10. Single and double trays of candy mixtures and chocolates overwrapped, shipped in slip-covers and to be discarded by retailers. These were formerly in closed boxes.

11. Lower half of boxes overwrapped in M. T. Cellpohane for display without spoilage.

12. Chocolates and other pieces formerly in boxes only, then appeared in 5 and 10¢ Cellophane wrapped units on counter display racks.

13. Machine wrapped bars (many nationally advertised), bags, boats, trays, boxes, kisses, caramels, individual hard candies and a lot of other machine wrapped varieties appeared.

14. Penny goods, one, two, three and even four for a penny have made their appearance on the market in 1931.

To a lot of us that's "old stuff", BUT A WONDERFUL STORY CAN BE BUILT AROUND THAT SEQUENCE TO SHOW THE INCREASING ACCEPTANCE OF CELLOPHANE IN THE CANDY BUSINESS.

The original use of Cellophane was to wrap candy boxes. No use was made of its transparency. When prices were reduced time and time again, Cellophane was used on smaller units where product visibility is such a powerful factor. Success of these Cellophane wrapped items caused a rapid spread in use. This continued as additional price reductions came through. In 1927 Moistureproof Cellophane came in to provide the second big advantage of protection of original candy quality. Today the Candy Industry is a splendid example of how Cellophane can change and step up the merchandising of an entire market.

M 5361

In 1924 the great majority of the candy produced was either in boxes or in bulk. Today the picture is shown by the following table, which also shows a rough estimate of our present sales in each classification.

	% of total candy	Cellophane wrapped
Boxed Goods	20%	90%
Bar Goods	60%	30%
All Others	20%	50%

But there is the danger of allowing our original enthusiasm to become stale, due to constant contact with the industry.

Right now, ask yourself the following questions:-

1. Does EVERY candy manufacturer in your territory know EVERY possibility in the field today?

2. Is everything he manufactures in Cellophane?

3. Are there other items which he can put out profitably in Cellophane?

4. Are there any distribution outlets he has overlooked selling, such as chain, drug and food stores, railway and subway stands, road stands, etc?

5. Has he an up-to-the-minute picture on Cellophane, including prices, machines, fabrication developments? Has he seen the newest, latest and most successful packaging methods of his competitors, etc.?

6. Is he trailing his competitors? If so, the Cellophane story will wake him up if presented properly.

7. In our rush to new and interesting developments in other fields, have you lost the proper perspective of the candy industry yourself? We cannot afford to do so.

Today practically every candy manufacturer uses SOME Cellophane. That's granted. But he can use more. They can all use more.

The fundamentals - visibility and protection - are probably more important in the candy industry today than any other field. Therefore, we must determine how Cellophane fits where it is not being used at present and get it on those products. To do this job properly we must use every bit of ammunition at our command.

M 5267

Defendant's Exhibit No. 75

BULLETIN

74-GG

INFORMATORY BULLETIN NO._____

TO ALL SALESMEN:

A NEW AND IMMEDIATE MARKET FOR CELLOPHANE!
MACHINE-WRAP CANDY KISSES, LOLLY POPS AND CARAMELS!

Your customers can now wrap kisses, lolly pops and caramels in Cellophane on their present machines which now use glassine or wax paper - with no conversion cost to speak of. Just substitute Cellophane and start turning out "kisses" with the increased sales appeal that sparkling transparency always brings.

This news comes at an extremely opportune time. A price cutting battle has been on in this market. Price only has been the sales weapon. Here is a way to step a product out of the competitive class and give it added sales appeal and at a price that commands a fair profit.

Moistureproof Cellophane is needed. Not only do you get a marvelously improved appearance but better protection, especially in the hot months and mucky climates.

Here is the story on each of the present machines now being used:

1. KISS WRAPPER - MODEL K - PACKAGE MACHINERY COMPANY.

No cost is involved to convert the machine to use the same size wrapper, 3¾" x 5". All the candy man has to do is simply clean off all wax from the machine and set the twisting wires up closer to the candy if the twist is not tight enough.

The sheet size can be cut down to 3¾" x 4" (3¾" roll stock width, 4" cut off) by means of a new set of gears that drive the cutting knife. These may be bought from the Package Machinery Company, Springfield, Mass., at approximately $50.00 per set and are very easily installed. It will pay for itself within a short time.

2. SALT WATER TAFFY WRAPPER - MODELS KD & KH - PKGE. M. CO.

Same story as on the Model K, except that the sheet size cannot be decreased, based on our present experience. It is possible it can be done later as we become more familiar with the machine.

3. LOLLY POP WRAPPER - MODEL LP - PACKAGE MACHINERY COMPANY.

Roll stock width varies with the Lolly Pop size. No cost to convert machine - simply clean thoroughly and tighten up the heated twisting wires to secure a closer twist.

DUPONT CELLOPHANE CO. 2 PARK AVE., NEW YORK CITY

M 5268

4. CARAMEL WRAPPER - MODEL E- IDEAL MACHINE COMPANY.

Model E and other models manufactured by the Ideal Wrapping Machine Company of Middletown, N. Y. for wrapping caramels require only the installation of a set of heating elements on the folding mechanism to permit the successful use of Moistureproof Cellophane.

The parts cost $45.00, F. O. B. Middletown, N. Y., with full installation instructions. Connections are made to any ordinary light socket.

* * * * * *

One thingmore; every one of thesemachines hasbeen tried out in production and customers are well pleased with both mechanical and sales results.

A list of concerns now operating these machines in your territory is enclosed. We want them covered as quickly as possible. Your personal efforts will be backed up by direct mail. Judging from the reaction at the Candy Convention, this market is "ripe for the picking". This is a hot "set up". Let's clean up on it.

The Engineering Service Section will follow your trade reports closely and help wherever needed.

C. F. Brown,
G. A. D. S.

EVM
attachment

M 5268

Defendant's Exhibit No. 76

BBC 4

SPECIAL TRADE REPORT

Section

By C. B. Estabrook Date 10-12-32 No. 6

Firm Mars, Inc. Bus. Candy

St. and No. 2019 No. Oak Park Ave. City Chicago State Ill.

Int'v'd. and Title Frank Mars, Pres.

Subject: Milky Way, and other bars in Cellophane.

(Answer each question numerically below)

1. Report of interview.
2. What action is to be taken on results of this call?
3. What action do you want others to take?
4. Who is to receive copies of this report?

1- Mars' attitude at first was very cold, and he said he would have to buy printed Cellophane as cheaply as he could printed glassine before he would consider it.

He liked the P.D.D. samples, so far as the design on the Cellophane was concerned, but thought nothing at all of the tray idea.

His present attitude is simply what Long said it was. He states he cannot increase cost of wrapper without either taking it out of the quality of the bar, or making the bar smaller, and he is willing to do neither. He also stated he does not intend to decrease his unit profit for a sales increase, which would be indefinite - stating the Curtiss and Schutter Johnson both tried selling bars without a profit and then said "and look at the fix they are in".

I pointed out the possibility of using Cellophane in rolls, with a sheeting machine, which would deposit the sheets on the conveyor belts, which he uses now, an not interfere with his straight line production, pointing out the low cost of such use.

His present material cost is .0195 for box of 24 bar (printed glassine - figure from Shellmar) against a cost of $.0302 per box of 24 bars for plain Cellophane roll stock, exclusive of cost of insert label - (sheet 7½x8½, Double Milky Way)

Possibility of use of Cellophane on new bars or when size may be changed, due to decrease or increase in cost of raw materials, was broached, and he admitted this idea had some merit. One or two Cellophane wrapped bars to a box, citing other lines ob business where this had been done successfully did not register.

I inquired what steps were being taken to insure prominent display of his bars in stores (having visited a number, where there were large displays of Cellophane wrapped bags, but not a Mars bar in sight) and he said they were relying on demand created by ~~the~~ their advertising, on quality, and on their salesmen to see that their bats got display. I told him it seemed to me a lot of new bars (leaving Cello hane out of the argument) were getting preferred display and he made a note to check into this.

On leaving, I noticed he locked the samples I gave him in his desk, and put the sheet of estimated costs in a folder in his desk.

We then had a discussion of advertising, and the Wrigley campaign fitted into this fine. He also asked why Campana was "folling with a package that was already successful" - stating he had listened to their radio program - I explained this to him and told of several other lines that had been successfully restyled, and he remarked "When I get ready to restyle mine, I'll get you fellows in here". In general his attitude is interested and friendly, but we still have a long way to go.

There is no possibility of machine wrap here now, Mars claims he can wrap cheaper by hand, considering th large outlay of money that would be necessary every time he wanted to change a size.

2- Will have to follow up with accurate retail store information, as to candy bar displays and sales, and work on Long, and other lesser lights in meantime.

3- None

4- W. J. Harte - C. F. Brown.

M 5269

Defendant's Exhibit No. 77

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman Crowley Date 9-18-33 No. 755

Firm Schutter Johnson Candy Co. Bus. Candy Class 1-12

St. & No. 1013 N. Cicero City Chgo. St. Ill.

Controlled by:

Final Decision by (Titles) R. Schutter & Mr. Sobel Contacted this call? obel

Buyer H. Ihrig Contacted this call? es

Others Contacted this call (Titles)

Type of Call—Productive X Service

Sources of Supply	Est. Cons.-lbs. This Quarter	If using competitive material, state type and reasons
Us	1,000	300 P.T.S. Past credit difficulties.
Sylvania	2,000	RETURN C.O.
Shellmar	700	SALES RECORD

Items wrapped in Cellophane: Special 5¢ bars and Cherry boxes.

Other products on which Cellophane could be used: (Note new products in work) Candy bars.

a. Sales tools used on this call:

Samples X Trav. Disp. Photos Pack. Dev.

Cons. Ads. Trade Ads. Mkt. Sur.

b. Agreement account? yes

c. Did you secure order? no

d. Service and general remarks—below

(a) They have decided to discontinue the use of transparent sheeting on their Old Nick and other chocolate bars. Cited Cellophane fundamental values as to why they should continue to use transparent sheeting on their bars, but they are determined to try out their plan. Will follow on this matter later.

(b) Suggested that make up some open face 1/2 pound boat units of chocolate cherries overwrapped in 300 P.T.

Date of last Prod. Call	Rec'd at District Office	Date Typed	
8-10-33	9-20-33	9-20-33	(See Below)

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

but they prefer to confine their efforts along this line to the 1 lb., boxes.

M5020

(4329 194)

Defendant's Exhibit No. 78

CC: W.A.Beh
R.C.Schilly

EXPERIMENT X-867

JUNE 18, 1934

A COMPARISON
OF
M.T. "CELLOPHANE" AND LAMINATED GLASSINE BAGS
ON
SALTED PEANUTS
PLANTER'S NUT & CHOCOLATE CO.

Du Pont Cellophane Co., Inc.
Technical Service Laboratory

M 5270

EXPERIMENT X-267

JUNE 18, 1934

A COMPARISON OF M.T. "CELLOPHANE" AND LAMINATED GLASSINE BAGS ON SALTED PEANUTS PLANTERS NUT & CHOCOLATE COMPANY

OBJECT

To determine the breakage of, and protection afforded to salted peanuts, by M.T. "Cellophane" and laminated waxed glassine bags.

PROCEDURE

Four full display cartons, each containing 24 5¢ units of salted peanuts were received from the Planter's Nut & Chocolate Company. The units in two of the cartons consisted of printed bags made of M.T. "Cellophane". In the other two were printed bags made of laminated glassine. (The laminated material consisted of two sheets of plain glassine joined with wax.)

On receipt the units in each carton were carefully examined for breakage of the bags. Then representative units of each type were exposed to 81% R. H. and to room conditions for a period of 28 days, determinations being made periodically for weight gain and taste of the peanuts.

Units at 81% R.H. were examined weekly for the four week period while those at room conditions were examined at the end of 2 and 4 weeks.

Permeabilities were run on bags of both types on receipt in the laboratory. Additional permeabilities were run at the end of the test on wrappers from units exposed to each test condition.

M 5270

RESULTS

Breakage

There was no breakage or splitting of any of the laminated glassine bags.

One break was found on one bag made of moistureproof Cellophane. This unit was in the center of the middle layer of one carton, the break itself being about 1/2" long, and across the grain of the material. It seemed to be due to rough handling when the bag was filled.

Four Cellophane bags in each carton of 24 showed small splits at the bottom of the bags on one or more of the creases. This condition was due to excessively sharp creasing at the time the bag was fabricated. None of these splits was large, all being less than 1/2" long. These bags were scattered in each carton and showed no correlation between position in the carton and splitting.

Weight Gain

TABLE I
SALTED PEANUTS

Percent Gain in Weight When Exposed to Different Conditions

Wrap and Exposure	Time in Weeks 1	2	3	4
81% R.H.				
"Cellophane"	1.6%	2.5%	3.6%	4.6%
Glassine	1.2%	1.9%	2.7%	3.6%
Room Conditions				
"Cellophane"		0.08%		0.32%
Glassine		0.08%		0.32%

M 5.270

RESULTS (Continued)

Tests

Peanuts at 85% R.H.

At the end of 7 days salted peanuts in laminated glassine showed a slightly decreased crispness, were still edible and of fair quality. Those in M.T. "Cellophane" showed a marked decrease in crispness and were barely edible.

At the end of 14 days the peanuts in the glassine bags were about the same quality as those in Cellophane at the end of 7 days. Those in Cellophane had become very rubbery and tasteless and were inedible.

At the end of the 28 day test the picture had changed only slightly in the comparative results, the general condition of the peanuts having, of course, become even worse. Those in Cellophane had absolutely no trace of crispness left and were absolutely inedible and tasteless. Those in glassine, while inedible and having practically no taste, were not quite as bad.

Peanuts at Room Conditions

Tastings conducted at the end of 2 weeks showed no noticeable change. At the end of 4 weeks, tasting showed a slight decrease in crispness, no other change being observed. The peanuts in glassine and Cellophane were of equal quality throughout and were perfectly edible during the entire test period.

M 5270

D

RESULTS (Concluded)

Permeabilities

TABLE II

Permeabilities on Used Bags

Samples	M.T. "Cellophane"	Laminated Glassine
Start of test	640.0	552.0
Finish of test		
4 weeks @ 81% R.H.	795.0	542.0
4 weeks @ Room Conditions	993.0	1062.0
Change from Start		
(a) @ 81% R.H.	plus 24.2%	- 1.8%
(b) @ Room Conditions	plus 55.3%	plus 92.5%

DISCUSSION

Without knowing the original moistureproofness of the various materials, the data under Results shows that from every angle the moistureproof Cellophane bags were not as efficient from a protection standpoint as the laminated waxed glassine bags although even these did not give particularly satisfactory protection. In only one place was there an indication that the Cellophane was superior to the waxed glassine. In Table II the final permeability of the waxed glassine was higher in one instance than that of the Cellophane from the same test conditions although this superiority was not shown in the tasting or weight loss tests.

In previous tests we have found that moistureproof Cellophane, in contact with a product such as salted peanuts (containing oil in large amounts plus salt) loses a considerable part of its moistureproofness. If the Cellophane used in this test was of good original P.V., this factor, coupled with any decrease in moistureproofness due to bag fabrication and printing

M 5270

DISCUSSION (Concluded)

may explain its performance.

CONCLUSIONS

Tests on 5¢ units of Planter's Salted Peanuts in M.T. "Cellophane" and laminated waxed glassine bags show:

1. As fabricated, the filled bags, made of laminated glassine, withstood shipment from the Planter's Nut & Chocolate Company better than the units made from M.T. "Cellophane".

2. Exposed to 81% R.H. for 4 weeks, neither material gave satisfactory protection.

3. Exposed to 81% R.H. M.T. "Cellophane" bags gave less protection than did the glassine bags.

4. At room conditions for four weeks (humidity being fairly low) the two materials gave equal and satisfactory protection.

5. Permeabilities of both materials when received were high, both being C minus in plant grade.

6. Permeabilities of the two materials during the test at room conditions became considerably higher. At high humidity P.V. of the glassine did not change appreciably while that of the Cellophane increased somewhat.

PREPARED BY A. E. Link
A. E. Link
Technical Service Section

APPROVED BY R. C. Schilly
R. C. Schilly
Technical Service Section

APPROVED BY _____
L. A. Beh, Manager
Technical Service Section.

MS.

M 5270

Defendant's Exhibit No. 79

EXTRACT FROM ...RUCTION BULLETIN

NO. 34-K

JUNE 20, 1935

BULLETIN

TO: C F BROWN

INSTRUCTION BULLETIN NO. 34-K

June 20, 1935

A NEW BASIC TREND IN THE CANDY INDUSTRY FROM "BULK" TO INDIVIDUAL WRAP PERHAPS OUR NEXT LARGE VOLUME INDUSTRY SWEEP

For a year and a half we have been talking about individual wraps - first in terms of caramels and kisses (merely a substitution job), next about hard candies. It is doubtful, however, if those of us who have not actually seen recent developments and talked with those responsible for them, can possibly get the broad picture of what is going on and visualize where this move is headed.

With only a relatively few manufacturers yet using Cellophane in volume and for a relatively short time, our new business in the candy industry is already running into very large tonnage. And this is but the start. There are basic advantages to the manufacturer, wholesaler, retailer and consumer so important it is bound to spread rapidly, provided we prod and direct the movement along proper lines.

CARAMELS

There is no particularly new thought here. This product has always been wrapped. It is merely a substitution of a more effective material - a well known story of complete visibility, greater eye, appetite and quality appeal and better protection.

We have gone far enough to prove the substitute of Cellophane for paper involves no mechanical problems, and the product can be sold at an advance of more than the extra cost of the Cellophane. We have plenty of evidence that displays have been improved and sales increased at higher prices.

Plan of Action: On caramels our job is merely a drive to convert all possible caramel wrapping machines — find out where they are and convince the skeptics.

TOFFEE AND KISSES

These products come into about the same category as caramels - a substitution job. So far we have not progressed as rapidly, probably due to the less attractive appearance of the product. This, however, should be an added reason - the flash and eye attractiveness of Cellophane is needed more than ever. Colored M. C. looks like a good bet here - or P.C. with complete foil wrap insert.

Plan of Action: Same as on caramels.

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DUPONT CELLOPHANE CO.

GENERAL SALES OFFICES

Defendant's Exhibit No. 80

BULLETIN

C F BROWN

INFORMATION BULLETIN NO. 137-K

October 7, 1935

FOIL COMPETITION

In certain candy accounts you may find evidence of foil selling propaganda (attempting to stress the superiority of foil as a heat repellant).

When reference is made to such tests with foil, you will find the following demonstration - developed by one of our salesmen - helpful in discounting the claims made.

First, light a candle. Then take a narrow strip of foil and a narrow strip of Cellophane and place a tiny drop of wax on each. Hold the foil strip about 5 inches above the flame of the candle and the drop of wax melts almost immediately. Do the same thing with the strip of Cellophane and the wax does not start melting for several seconds and then starts to melt on the top rather than on the bottom. This proves very effectively that foil conducts heat more rapidly than Cellophane. Naturally, this is far more important than the theory advocated by the foil manufacturers that foil reflects heat rays.

Material for this test is included. We suggest you rehearse the act before you put it on. The demonstration should be as successful for you as it has been for the "inventor" - L. B. Dickson.

Further evidence that the rather sensational claims of the foil people are not borne out by actual practice is contained in data just received in the following reports:

1. A marshmallow account tried foil bags and are experiencing plenty of trouble in warm weather. The foil retained the heat to a point where the marshmallows melted down to a solid mass. Dealers and jobbers are returning stock daily!

2. A candy house marketing a foil wrapped chocolate package stated on the package that the chocolate would not change color in warm weather. Tests made by another large candy firm at 93 degrees showed the chocolate turned just as quickly as when no foil was used!

M 5272

You can sum it up this way; it makes no difference what material is used as a wrapper. When a product goes into stock in a warehouse or store it will come into equilibrium with room temperature. Whether it takes one hour or one hour and a quarter - or what have you - makes no difference whatsoever.

We make no claims that Cellophane is better or worse in this respect than other materials (and be sure you don't). All we say is we are no worse — and any claims of heat protection are just so much poppy-cock.

C. F. Brown,
G. A. D. S.

h
attachment

M 5272

Defendant's Exhibit No. 81

BULLETIN

INSTRUCTION BULLETIN NO. 8-M

C. F. BROWN

MARCH 8, 1937

A NEW OFFENSIVE NEEDED -- ON CANDY BARS

AS POINTED OUT AT THE RECENT ANNUAL MEETINGS, WHILE OUR TOTAL BUSINESS IN THE CANDY INDUSTRY HAS SHOWN AN INCREASE, WE HAVE LOST GROUND ON 5¢ AND 10¢ BARS. THE DISCONTINUANCE OF TRANSPARENT WRAPPING ON CERTAIN CANDY BARS SEEMS TO BE PRINCIPALLY DUE TO:

1. RISING INGREDIENT COSTS (AS POINTED OUT IN BULLETIN 8-MM), FORCING THE MANUFACTURER TO TRIM EXPENSES ELSEWHERE -- AND PACKAGING HAS BEEN THE TARGET.

2. INTENSIVE SELLING EFFORTS ON THE PART OF THE FOIL AND GLASSINE MANUFACTURERS.

THIS SEEMS TO BE A SITUATION WHERE, IN OUR EFFORT TO STIMULATE INDIVIDUAL CANDY WRAPS, WE HAVE SLACKENED OFF OUR ATTACK ON BARS, SETTING THE STAGE FOR INROADS BY SELLING CAMPAIGNS OF OTHER TYPES OF WRAPS. WE NOW HAVE THE JOB OF STOPPING THESE INROADS AND STRIKING BACK IN A POSITIVE MANNER.

AS A FIRST STEP, WE NEED TO FIND OUT THE ACTUAL FACTS SO WE CAN SET UP THE MOST EFFECTIVE PROGRAM POSSIBLE. TO DO THIS WE SHALL NEED YOUR HELP IN THE FOLLOWING DIRECTIONS:

1. MANUFACTURER ANALYSIS
   AN UP-TO-THE-MINUTE REPORT FROM YOU COVERING THE BAR SITUATION WITH EACH OF YOUR FIRST CLASS CANDY ACCOUNTS, SHOWING ANY CHANGES DURING THE PAST YEAR AND REASONS WHY (FORMS ARE ATTACHED). WHEN POSSIBLE, DEVELOP THIS INFORMATION BY DIRECT QUESTIONING.

2. RETAIL SURVEY
   CHOOSE THREE TYPICAL VOLUME CANDY OUTLETS. PROGRESSIVE INDEPENDENTS RATHER THAN CHAINS ARE PREFERRED (FORMS ARE ATTACHED).

WE SUGGEST YOU BE ON THE WATCH FOR ANY SIGNIFICANT STATEMENTS MADE

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

"CELLOPHANE" DIVISION

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BY EITHER MANUFACTURERS OR DEALERS, AND RECORD THESE ON YOUR REPORTS.

FORWARD BOTH TYPES OF REPORTS THROUGH YOUP DISTRICT OFFICE TO THE WRITER AS QUICKLY AS POSSIBLE. RETAIL SURVEYS BY MARCH 20TH, MANUFACTURER CONTACTS ON YOUR EARLIEST SCHEDULED CALLS.

YOUR EFFORTS WILL HELP MAKE THE NATIONWIDE SUMMARY OF GREATEST VALUE, AND AS QUICKLY AS POSSIBLE YOU WILL BE ADVISED JUST WHAT THE COMPLETE PICTURE IS.

IN THE MEANTIME, TURN ON THE HEAT IN YOUR CONTACTS WITH BAR MANUFACTURERS.

C. F. BROWN,
G. A. D. S.

ENCLOSURES: MANUFACTURER ANALYSIS SHEET
RETAIL SURVEY SHEET

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Defendant's Exhibit No. 82

BULLETIN

C. F. BROWN

INSTRUCTION BULLETIN NO. 52-P

December 15, 1939

MT FOR PLASTIC CANDY

A special film has been developed and is now available for wrapping sticky plastic types of candy.

Our regular MT and MST films are being used successfully by many customers for this purpose, but in the case of certain types of candy have not been entirely satisfactory due to sticking of the film to the product.

This refers particularly to the grades of caramels with low butter-fat content, kisses, taffy, etc.

The new film has been developed with the one purpose of eliminating sticking - all other characteristics are approximately the same as regular production. It is N heat-sealing.

Check your present users to make certain operation is entirely satisfactory from a candy-sticking standpoint. If so, do not disturb. If not, arrange for testing this film.

More important, however, is the opportunity for new business - particularly on kisses and taffy where we have never had an entirely satisfactory film.

Orders should specify "MT for Plastic Candy".

C. F. Brown,
G. A. D. S.

H

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

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"CELLOPHANE" DIVISION

Defendant's Exhibit No. 83

The Perfect Package for NUTS

If you are packaging

- Candy
- Crackers
- Cakes
- Cookies
- Cigars
- Cigarettes
- Coffee
- Pretzels
- Tobacco
- Popcorn
- Marshmallows
- Drink Powders
- Potato Chips
- Dried Fruits
- Nut Meats
- Pharmaceuticals

— it will pay you to investigate Pliofilm

HERE are the reasons why packers say the world's finest transparent packaging for nutmeats is Pliofilm*:

This new transparent synthetic sheet is so thoroughly moisture-vapor-proof it protects nuts better than their own shell — prevents moisture pick-up — keeps them fresh and crisp and tasty until used.

Even in wet humid climates Pliofilm-packaged nuts will not become soft and soggy!

Pliofilm's greater toughness and durability eliminate the danger of split, broken packages. Its clear transparency shows your meats to best advantage — promotes sales.

Remember, Pliofilm is made exclusively by Goodyear — *there's nothing else like it!* It is odorless, tasteless. Easily handled by wrapping and bag-making machines. Heat seals airtight or sealed with adhesives. See for yourself with a test wrap on your product. Write: Pliofilm Sales Department, Goodyear, Akron, Ohio.

*Trade-mark of The Goodyear Tire & Rubber Company

A Centennial Product of The Greatest Name in Rubber

THE BEST THINGS COME WRAPPED IN

GOODYEAR Pliofilm

Modern Packaging

OCTOBER 1939

(4342)

(187)

M 5275

EXPERIMENT #39-482

January 29, 1940

CC: ~~G. F. Brown-O. F. Benz~~
~~G. M. Switzer-T.~~ L. Hines-J. E. Hatt-L. A. Yerkes
Dr. G. M. Karns, Buffalo
A. F. Wendler

PROTECTION AFFORDED SALTED NUTS

"CELLOPHANE" DIVISION,
E. I. DU PONT DE NEMOURS & CO., INC.,
Sales Service Section,
Wilmington, Delaware.

(4343 188)

M 5276

SUBJECT:

PROTECTION AFFORDED SALTED NUTS

OBJECT:

To evaluate several types of films used for packaging mixed salted nuts.

GENERAL:

Several tests conducted in the past have developed information which is contradictory and somewhat inconclusive. In order to determine more completely and definitely the behavior of salted nuts meats when packaged in "Cellophane", the following test work was undertaken

SOURCE OF TEST MATERIALS:

Freshly roasted and salted nuts purchased locally, as follows, and mixed in the laboratory:

1. 9 pounds - Spanish peanuts
2. 4-1/2 pounds - broken cashews
3. 4-1/2 " - pecans

PROCEDURE:

Single wall and double wall Transwrap units of each of the following films were prepared:

1. #300 MST "for salted products" - 17.5% glycerin
2. #300 MSQT - 17.5% "
3. #300 Special MST - 20% Plytex
4. #450 MST - 25% glycerin
5. Goodyear's rubber film

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Twenty-four of each of the above were filled with approximately one ounce of mixed nuts. Twelve of each of these were stored at 50% relative humidity conditions and 12 at 81% relative humidity, room temperature. All units were weighed, examined for puckering of the film and condition of the contents originally and after one, four, seven, fourteen, twenty-one and thirty days storage.

Permeabilities of the films used were determined initially and after each examination.

DETAILS OF RESULTS:

A. Room Condition Storage

The attached Table I shows the percent loss in weight of salted nuts stored at room conditions.

These data show that the loss in weight was very slight for both single and double walled bags in all films with insignificant difference to warrant any practical separation between film types. This lack of difference is without question due to the prevailing low humidities at normal room conditions at this season of the year when values range from 15% to 20% R.H.

Condition of the contents of all units was good for duration of the test but, as would be expected over such a long storage, staleness development was evident, but to an equal degree in all units. No "off taste" was encountered in any of the units.

In single wall units, rubber film showed no permeability degradation after the 30 day test period

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while all four types of "Cellophane" were very appreciably degraded with relatively little to choose between the different types.

In double wall units permeability degradation was eliminated on all types of film tested.

B. Storage at 81% Relative Humidity

With the case of the units stored at high relative humidity, the data are shown in Tables II, III, IV and V attached.

From standpoint of change in weight of the single wall units, it is demonstrated that Goodyear's rubber film was definitely the most satisfactory and #300 MSQT - 17.5 was the most suitable of the "Cellophane" units. With double wall units, #300 MSQT - 17.5 "Cellophane" was superior to all films, including rubber.

Listing the five films investigated with respect to puckering gives the following expected ratings.

1. Goodyear's rubber film (best)
2. #450 MST - 25.0
3. #300 MST - 17.5
4. #300 MSQT - 17.5
5. #300 MSYT - 20.0 (poorest)

Data on crispness and flavor maintenance are shown in Table IV.

Regarding crispness, Goodyear's rubber film was superior to all types of "Cellophane" tested, regardless of whether the units were of single or double wall construction.

Double wall units of #300 MSQT - 17.5 were the most

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suitable of the various types of "Cellophane".

With respect to flavor maintenance, Goodyear's rubber film was superior, with MSQT being very slightly better than the other "Cellophane" films.

In both crispness and flavor maintenance the advantage of double wall units of "Cellophane" is pronounced.

Concerning permeability of the several films, as shown in Tables V and VI, the degradation of 81% relative humidity, room temperature, was slightly more than at room conditions, but not enough to account for the difference in physical characteristics of the nuts stored under these two conditions.

Comparison with Tables II, IV and VI demonstrate that change in weight of nuts stored at this high humidity has a definite relationship to the degree of permeability degradation but little or no relation to the change in physical characteristics of the nuts.

SUMMARY

1. An overall average preferential listing of the films tested gives the following:
   (a) Goodyear's rubber film (best)
   (b) #300 MSQT - 17.5
   (c) #450 MST - 25.0
   (d) #300 MST - 17.5
   (e) #300 MSYT - 20.0 (poorest)

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Defendant's Exhibit No. 86

Cellophane TRADE REPORT

(Trade Analysis Copy)

PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☐
PLANNING	☐ mth

Salesman: R. F. Hansen — Date: 10/28/40 — Type Call: P

Firm: Peter Paul, Inc. — Date last Call: 10/4/40 — Type Call: P — Date last Prod. Call: — Class: 1-18

St. & No.: New Haven Road — Bus.: Candy

City & State: Naugatuck, Conn. — Controlled by:

Final Decision by (Titles): C. K. Kazanjian, President — yes — Contacted this call?

Buyer: H. R. Perry — yes — Contacted this call?

Others Contacted this call (Titles): George Shamlion, H. M. Billings; A. G. Villwock, John Tatijian

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter
du Pont	26,000
~~Nashua~~ Shellmar Milprint	5,000

If using competitive material, state type and reasons:

Items in transp. sheeting: (specify which is competitive or converted film)

Mounds - 10 Crown Gum

Other potential products:

Dreams

a. Sales aids used—specify below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Mailing list changes—below:

e. Agreement expires?

f. Did you secure order? Standing order

a) Photos. Economy Stores. Summer bar candies. Samples Schrafft bars. Bunte new patty in #300 P.T. printed "Cellophane". Dobeckmun's metallic printing samples.

---

c) C. K. Kazanjian informed writer that as of Dec. 1st they will discontinue "Cellophane" on Mounds, replacing it with glassine which they will print themselves on Weiss Speedy machine.

CREATIVE ACTIVITY

3. New items on market since last call—supplier, distribution, annual potential.

4. What is your plan for next call?

2. Double wall units of "Cellophane" displayed a pronounced advantage in both crispness and flavor maintenance.

By W. B. Tibbets Jr.
W. B. Tibbets, Jr.,
Sales Service Laboratory.

C. L. Blair
C. L. Blair, Manager,
Sales Service Laboratory.

APPROVED: A. F. Wendler
A. F. Wendler, Manager,
SALES SERVICE SECTION.

WBT:68

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TABLE I

PERCENT LOSS IN WEIGHT OF SALTED NUTS

ROOM CONDITIONS*

	Time in Days 1	4	7	14	21	30
Single Wall						
#300 MST - 17.5	1.35	0.60	1.24	0.88	0.72	1.39
#300 MSQT - 17.5	0.92	0.35	0.69	0.41	0.57	0.32
#300 Spec. MST 20.0	0.67	0.40	0.64	0.40	0.44	0.34
#450 MST - 25.0	0.64	0.30	0.30	0.08	0.11	0.37
Goodyear's Rubber	0.19	+0.42	+0.03	0.06	0.10	0.16
Double Wall						
#300 MST - 17.5	0.59	0.26	0.91	0.75	0.65	0.98
#300 MSQT - 17.5	0.81	0.75	0.93	0.66	0.39	1.05
#300 Spec. MST - 20.0	0.94	0.29	0.74	0.71	0.71	0.65
#450 MST - 25.0	0.54	+0.06	0.25	0.32	0.16	0.47
Goodyear's Rubber	0.61	0.07	0.17	0.00	+0.10	0.68

*Gain where indicated by plus (+) sign.

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TABLE II

PERCENT GAIN IN WEIGHT OF SALTED NUTS AT 81% REL. HUM.*

	Time in Days					
	1	4	7	14	21	30
Single Wall						
#300 MST - 17.5	-0.47	0.47	0.75	1.87	2.58	3.97
#300 MSQT - 17.5	-0.13	0.46	0.79	1.64	2.30	2.46
#300 Spec. MST - 20.0	-0.68	0.31	1.03	1.81	2.32	2.56
#450 MST - 25.0	-0.07	1.02	1.61	2.70	3.05	3.86
Goodyear's Rubber	-0.03	0.69	0.38	0.76	1.03	0.86+
Double Wall						
#300 MST - 17.5	-0.26	-0.03	0.03	0.42	0.42	0.69
#300 MSQT - 17.5	-0.59	-0.12	0.09	0.09	0.31	0.59
#300 Spec. MST - 20.0	-0.40	0.12	0.70	0.67	0.61	0.61
#450 MST - 25.0	0.07	0.65	1.02	1.70	1.80	2.72
Goodyear's Rubber	-0.12	0.41	0.32	0.35	0.67	0.73

*Loss where indicated by minus (-) sign.

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TABLE III

PUCKERING OF NUT BAGS AT 81% REL. HUM.

	Time in Days					
	1	4	7	14	21	30
Single Wall						
#300 MST - 17.5	7	6+	6	5	5	5
#300 MSQT - 17.5	6+	5+	5	4+	4	4
#300 Spec. MST 20.0	3+	2	1+	1+	1	1
#450 MST - 25.0	9	8	7+	7+	7	7
Goodyear's Rubber	10	10	10	10	10	10
Double Wall						
#300 MST - 17.5	8	6+	5+	4+	4+	4
#300 MSQT - 17.5	6+	5	4+	3+	3	2+
#300 Spec. MST - 20.0	3+	2	1+	1	1	1
#450 MST - 25.0	7+	7	6+	6+	6	6
Goodyear's Rubber	10	10	10	10	10	10

Key to Numerical Ratings

10 - None

8 - Slight

7 - Borderline - Passable

6 - Distinct

4 - Pronounced

2 - Extreme

M 5276

TABLE IV

PHYSICAL CHARACTERISTICS OF SALTED NUTS

STORED AT 81% R.H.

	Time in Days — Crispness						Time in Days — Flavor					
	1	4	7	14	21	30	1	4	7	14	21	30
Single Wall												
#300 MST-17.5	10	9+	8+	6+	4+	4	10	10	7	6	3	2+
#300 MSQT-17.5	10	10	8	7	5	4	10	10	7	6	5	3+
#300 Spec.MST -20.0	10	9+	6+	6	4+	4	10	10	6+	6	4	2+
#450 MST -25.0	10	9+	7	7	6+	5+	10	10	6	5+	5	3+
Goodyear's Rubber	10	10	10	9+	9+	9+	10	10	9+	9+	8	7+
Double Wall												
#300 MST-17.5	10	10	10	9+	8	7+	10	10	9+	9	7	6
#300 MSQT-17.5	10	10	10	10	9	8+	10	10	10	9	8+	6+
#300 Spec.MST -20.0	10	10	8	8	6+	6+	10	10	7+	7	6+	6
#450 MST-25.0	10	10	8+	8	7	7	10	10	9	8+	7	6
Goodyear's Rubber	10	10	10	10	10	10	10	10	10	10	10	9

Key to Numerical Ratings

	Crispness	Flavor
10	- Excellent	- Excellent
8	- Good	- Good
7	- Passable	- Passable
6	- Distinct softening	- Slightly stale
4	- Pronounced loss of brittleness.	- Distinctly stale
2	-	- Poor

M 5276

TABLE V

PERMEABILITIES AT ROOM CONDITIONS

	Original	Time in Days — 1	4	7	14	21	30
Single Wall							
#300 MST-17.5	28	504	449	446	469	461	573
#300 MSQT - 17.5	12	312	354	245	373	251	357
#300 Spec. MST-20.0	22	381	422	306	312	326	490
#450 MST - 25.0	40	429	323	307	375	393	360
Goodyear's Rubber	58	59	60	60	62	57	54
Double Wall							
#300 MST - 17.5	-	38	47	37	48	41	57
#300 MSQT - 17.5	-	21	29	32	29	29	29
#300 Spec. MST - 20.0	-	50	60	42	48	50	50
#450 MST - 25.0	-	63	66	74	70	69	72
Goodyear's Rubber	-	26	30	30	30	32	36

TABLE VI

PERMEABILITIES AT 81% REL. HUM.

	Original	Time in Days — 1	4	7	14	21	30
Single Wall							
#300 MST - 17.5	28	447	372	402	539	524	623
#300 MSQT - 17.5	12	240	330	327	366	306	429
#300 Spec. MST-20.0	22	480	345	419	342	324	740
#450 MST - 25.0	40	393	386	446	609	419	656
Goodyear's Rubber	58	57	59	60	63	63	75
Double Wall							
#300 MST - 17.5	-	33	39	29	27	29	48
#300 MSQT - 17.5	-	29	30	23	35	36	29
#300 Spec. MST - 20.0	-	38	38	35	36	27	33
#450 MST - 25.0	-	51	71	50	80	62	83
Goodyear's Rubber	-	44	36	41	47	41	39

M 5276

Defendant's Exhibit No. 85

B-12315*

DU PONT

Cellophane TRADE MARK

TRADE REPORT

(Trade Analysis Copy)

BV

SALES COR.	☐
PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☐
PLANNING	☐

Salesman: R. F. Hansen — Date: 2/7/40 — Type Call: P

Firm: Peter Paul, Inc. — Date last Call: 1/14/40 — Type Call: P — Date last Prod. Call: — Class: 1-18

St. & No.: New Haven Road — Bus.: Candy

City & State: Naugatuck, Conn. — Controlled by:

Final Decision by (Titles): C. K. Kazanjian, President — Contacted this call? no

Buyer: John Tatigian, Gen. P.M. — Contacted this call? yes

Others Contacted this call (Titles): C. H. Flint, V.P. Charge of Sales — yes

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter
Du Pont	34,000
Sylvania	24,000
Shellmar	
Nashua	30,000
Milprint	

If using competitive material, state type and reasons

Items in transp. sheeting: (specify which in competitive or converted film)

Other potential products:

a. Sales aids used—specify below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Mailing list changes—below:

e. Agreement expires?

f. Did you secure order?

FEB 15 1940

Agreement signed for 3/6/40 - 3/5/41.

Due to increased production on gum which is 100% Du Pont film, estimated consumption 1st quarter should reach 34,000 lbs. Sylvania dropping to 24,000 due to slowness in getting Weiss press in operation in 1940.

If Dream business is lost for 1940, which in Flint indicates may happen - this represents 15% of their bar candy business, printing done by Milprint and

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential

4. What is your plan fc. next call?

~~Defendant's Exhibit No. 86~~

Package Development Request

1. Product?
2. Date wanted?
3. Retail price?
4. When will samples be sent?
5. Description of development desired: type of wrap, label, containers, copy, etc.
6. Type of Cellophane?

If Package is to be Machine Wrapped

7. Peak daily and annual production each size?
8. Are wrapping machines now used? (name, model, etc.)
9. Remarks?

ine would soil easily on counter.

Mr. Flint indicated they may switch over to glassine as soon as present supply of Cellophane printed wraps are used. Writer will see Mr. Shamlian in an endeavor to prevent this.

Mr. Perry not in, but press still running 2 shifts on Mound wraps.

4. Get Nashua to make up better looking Dream wrapper Since Mrs. Flint does the designing, will have Nashua representative diplomatically get her ideas. Get Mr. Shamlian to run test where all things are equal. Would have Shellmar make up new Dream wrap, but his acceptance here is very poor.

5. C. B. Estabrook

Will you have a sample thermo plastic adhesive sent to Mr. Flint. Thanks!

Handled by
CC - CBE
N. Y. Dist. Sales

2/9 940	P	Contacted Shamlion and learned real reason for going into Glassine on Dream bar. Was high cost of manufacture due to milk chocolate and almond prices; either had to reduce size or go into Glassine. Although tests in chain as Flint told writer Wednesday proved 40% increase. Discuss in detail with C. B. Estabrook

Letter to C.M.A. from GW.MCC dated 2/22/40
"Signed agreement applicable to their purchases during the period from 3/6/40 to 3/5/41 inclusive."

M 5031

c) C. K. Kazanjian informed writer that as of Dec. 1st they will discontimue "Cellophane" on Mounds, replacing it with glassine which they will print themselves on Weiss Speedy machine.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made, including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

This is due to rise in material costs of Mounds - saving of 25¢ per M wraps as approx. $36,000. per year.

Although we had known of their thinking in this direction it is a blow to du Pont and to writer, as we felt his Mound bar was outstanding package in the candy bar field, although visibility and protection did not enter into the picture, sparkle and eye appeal, with little tendency of collecting dust, was feature of "Cellophane" wrap.

Sylvania now endeavoring to get half of gum business, but writer was assured of 100% of this business and it is increasing every week. Potential should equal 50,000 lbs. during 1941.

---

1. None.

2. Bagged candy units as per recent P.D. submitted here, now definitely being considered for adoption. Mr. Flint away on trip to get trade reaction to this bagged line. Mr. J. Smith of Shellmar following on it as per letter from C. B. Estabrook.

3. Submitted Dobeckmun metallic printing for any new bar they may be considering -- a double cocoanut patty similar to Bunte's mint patty unit in printed "Cellophane". Ease of converting same chocolate covered cocoanut patty into family package for grocery trade.

R) Considering an oval shaped patty but this is

OVER

M 503

201

J4C

Package Development Request

1. Product?
2. Date wanted?
3. Retail price?
4. When will samples be sent?
5. Description of development desired; type of wrap, label, containers, copy, etc.
6. Type of Cellophane?

If Package is to be Machine Wrapped

7. Peak daily and annual production each size?
8. Are wrapping machines now used? (name, model, etc.)
9. Remarks?

confidential -- have not decided on production as yet.

4. Follow through on new bar in a metallic print double wall wrap, bagged Mounds, caramels.

5. None.

M 5034

(4357 - 202)

should reach 34,000 lbs. Sylvania dropping to 24,000 due to slowness in getting Weiss press in operation in 1940.

If Dream business is lost for 1940, which in Flint indicates may happen - this represents 15% of their bar candy business, printing done by Milprint and

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CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

Shellmar.

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1. & 2. - Deliveries of printed #300 M.S.T. wrap for gum made by Nashua for Van Buren machine wrap. Balance of machine will not be in operation before June or July.

3. Gum Department - Mr. Flint interested in new thermo plastic adhesive for sealing printed gum package. Also plans to try out slit colored tab opener on Saturday.

R) Likes this idea and is aware of Wrigley type patent but they have different type application.

Candy - Made second survey of Springfield, Williamantier, Bridgeport on Dreams in glassine and still failed to find any marked enthusiasm from dealers. Willimantier dealer preferred Cellophane due to its "liviness of color". Urged them to make equalization test of glassine vs. "Cellophane" in 8 stores for 2 weeks - 1st week 4 in Cellophane, 4 in glassine. Reverse at the second week.

R) New England has been tested since 1st of July, 1939 and sales were up and down - mostly up in glassine, but recently they had a 40% increase in business from large chain when they switched over to glassine.

Since their is no visibility or protection on Dream bat, it boils down to appearance, and writer pointed out Cellophane had quality appearance whereas glass-

Defendant's Exhibit No. 87

R-12010

DU PONT

PACKAGE

Cellophane
TRADE MARK

TRADE REPORT
(Trade Analysis Copy)

SALES COR.	☐
PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☐
PLANNING	☐

Salesman: W.F. DORFLINGER dp
Date: 5/27/40
Type Call: S.
Firm: Davis Candy Co.
Date last Call: AR
Type Call: S.
Date last Prod. Call: AR
Class: AR
2-4 per
St. & No.: 512 Cuyahoga St.
Bus.: Candy
City & State: Akron, Ohio
Controlled by:
D.C. 10/4/40
Final Decision by (Title): Harry E. Davis
Contacted this call? Yes
Buyer: E. Frey (Partner)
Contacted this call? W
Others Contacted this call (Titles):

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Goodyear	1000	

Items in transp. sheeting: (specify which in competitive or converted film)

Suckers

Other potential products:

RECEIVED
MAY 31 1940
RAYON DEPARTMENT
WILMINGTON

a. Sales aids used—specify below:
b. Latest success story—below:
c. Service and general remarks—below:
d. Mailing list changes—below:
e. Agreement expires?
f. Did you secure order?

A. E.A. Wight's letter 5/14. This concern, as previously reported, are chiefly interested in building and selling Wrapping Machines. The original plan has now been changed to install equipment on a rented basis. One thousand dollars installation cost and $50 a month if concern buys flexible wrapped stick from subject. A higher monthly charge if they do not. First machine was installed in Phila. a few weeks ago. (Do not care to divulge the candy makers name until permission is granted). They mentioned that Minter and

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
4. What is your plan for next call?

8/20/40 C. E. Frey. Followed up lead from ~~Buckx~~ Buckeye that subject might be in the market for MST on suckers. Found this was not so, only two wrapping machines installed to date, that they have built, is the one here & the other which went to Kroekel & Oetinger(Phila.). These machines can only handle rubber film. Will hold account AR until there is a possible application for us.

Rassell
Pres. + R

10/4/40 C. Mr. Frey. E.A.W's letter on renewing contacts. Firm still using rubber film on suckers. Also working on building machines for wrapping changed from AR to 2-4.

Woodward Pres. + R Harry (B)

10/23/40 C. Harry Davis, A. Hahn. Firm are still using rubber film on their sucker machine. Only machine they have sold is the one at Kroekel & Oettinger, Phila. Considering manufacturing peanut brittle & were thinking of making their own bags from rubber film. I covered advantages of double MST & cited use by Confectioners Inc., Beech Nut, etc. Made up sample bag and furnished sheets so extra samples could be tried out. Machine book data on sealing equipment. R-Will probably start with Gruenberg iron & hand make bags. Then if item goes over will consider bag making equipment.

H.R. Frey Harry (B) Pres. + R

11/6/40 C. Harry Davis. Delivered double bags I had made up for peanut brittle. Will try out with heat seal. Expect to adopt.

Harry (B)

M 5049

(4359 204)

Defendant's Exhibit No. 88

R. 1518*

DU PONT

fe

Cellophane
TRADE MARK

TRADE REPORT
(Trade Analysis Copy)

SALES COR.	☐
PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☐
PLANNING	☐

Salesman: P.A.Harbison — Date: 11/11/40 — Type Call: P

Firm: FRANTZ CANDIES, INC. — Date last Call: 10/30/40 — Type Call: S — Date last Prod. Call: 10/ 7/40 — Class: 1-12

St. & No.: Cherry & Grant Sts. — Bus.: Marshmallows

City & State: Lancaster, Pa. — Controlled by:

Final Decision by (Titles): Chas. L. Supplee, Pres. — Contacted this call? yes

Buyer: — Contacted this call?

Others Contacted this call (Titles): J. R. Moedinger, Secy. & Treas.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
du Pont	1,500	
Shellmar	500	
Diaphane	3,000	
Milprint	500	

RETURN TO "CELLOPHANE" TRADE ANALYSIS

Items in transp. sheeting: (specify which in competitive or converted film)

Marshmallows (penny units, boat unit, bags 5¢ - 1/2# and 1#) -- Bars.

Other potential products:

New specialties.

a. Sales aids used—specify below:	d. Mailing list changes—below:
b. Latest success story—below:	e. Agreement expires? none
c. Service and general remarks—below:	f. Did you secure order? no

C (1) After investigating subject at our suggestion, have ordered Peters Automatic Sheeter (delivery expected in 5 - 6 weeks) and they will henceforth purchase wrap for bar line in roll stock, slitting and sheeting needs.

On volume bar wraps used this year, figure they can save about $1100. a year on wrapper cost and since machine will cost only $700. figure it as a very worth-while investment.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential

4. What is your plan for next call?

11/26/40 S. Supplee & Moedinger. Working at capacity, chiefly on bag units. Dobeckmun now getting some bag business here altho Diaphane has bulk. Automatic sheeter not rec'd yet, expect in next wouple weeks. Starting to build plant addition - hope to have completed shortly after Jan. 1st.

12/11/40 S. Moedinger (Supplee out of town). Continue very satisfactory volume on bag units but penny items at standstill. Not much boat business either. Diaphane still getting bulk of bag req. but Dobeckmun & Shellmar get occasional order.

12/24/40 S. Supplee & Moedinger. Making rapid progress on new addition to factory, expect occupancy by Feb. 1st. Automatic sheeter not received yet but being shipped this week. Secured 500# order.

M 5035

(4361 206)

Defendant's Exhibit No. 89

BULLETIN

INFORMATION BULLETIN NO. 17-SS

R.M.FROMMER

February 25, 1941

A NEW SHOT AT AN OLD MARKET!

The chocolate bar section of the candy industry has always been a very attractive potential for us to shoot at. However, prior to now our shots have not been very successful in terms of poundage.

The reasons for this situation are undoubtedly well known to you. The average bar manufacturer has, up to now, not agreed with us that a transparent package is desirable for chocolate bars, and for various reasons has continued to show a preference for the opaque foil package.

Since competition among the various brands of chocolate bars continues to be very keen, there is every need to make one bar stand out against another on the counter.

The New England Confectionery Company saw the opportunity in introducing their Necco filled chocolate block (in four different flavors) to create unusual distinctiveness for the units by a printed "Cellophane" band overwrap over foil. The four different flavors are distinguished through a change in color scheme.

Early reports indicate fine acceptance from the trade.

C. F. Brown,
DIRECTOR OF SALES.

H
Attachment: 4 Flavors of Necco Bars

M 5277

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

"CELLOPHANE" DIVISION

R12/34

Cellophane Special Trade Report

SECTION TECHNICAL

RETURN TO CELLOPHANE TRADE ANALYSIS

Customer	Salesman		
KRAFT FOODS CO.	W. T. Brown -- H. C. Broems		jet
St. and No.	Date	Date Last Call	First Call
	4/24/47	11/15/46	☐
City - State	Business		
Chicago, Ill.	Cheese & Misc. Foods	W☐ R☐	Number

1. Persons Interviewed and Titles.
2. Report of Interview.
3. Competitive Information

1. Norwood Fisher, Mgr. Pkg. Devel.; Frank Holz, Mgr. Pkg. Prod.; Allen Wright, Mgr. Merchandising.

2. Caramels, 1# Bag Package.

Presented package development and descriptive brochure intended to maintain their interest in using Cellophane bag as opposed to trend toward opague paper bag. Development covered functional aspects, such as bag size and type and packing procedure, as well as color and design treatment. (For details see file copy of brochure dated 3/28/47.) Presentation well received, but Wright is currently favoring paper bag, and showed us new design they intend using. His argument is that Cellophane bag becomes rumpled and presents poor appearance. (We also felt from his remarks that he expects to make the opague package appear to be "more" for the money.) Mr. Broems suggested comparative sales test and Wright agreed. Later, Holtz told us this was quite a concession on Wright's part. Wright evidently has strong views based on his past experiences in other fields. Holtz and Fisher are in favor of Cellophane. We feel a more compact package and better packing procedure will overcome "rumpled" appearance of Cellophane bags. Holtz will endeavor to find most compact bag size consistent with efficient operation of rotary crimp sealers. Claims present Cellophane bag made purposely deeper so that caramels will not interfere with sealing.

4. Action You Will Take.
5. Action Desired of Others.
6. Copies of this report to:

On basis of discussion here today, poor appearance of film in retail stores will continue as long as it is necessary to produce a slack-filled bag, and while insufficient attention is paid to packing procedure. If those factors cannot be adjusted, fate of Cellophane vs. paper bag seems to rest on consumer/retailer preference, and on competition, plus proper handling of color and design and printing quality.

Holtz has ordered solid opague, reverse printed Cellophane bags and will endeavor to get sales test vs. paper.

MST 53 and 54 were discussed re durability and appearance, but film selection would not change factors mentioned above.

6. CC: D. E. Drew W. G. Hunter
H. C. Broems
N. Allen
M. S. Walsh - File: Bags
W. T. Brown

M 5063

Defendant's Exhibit No. 90

building and selling wrapping machines. The original plan has now been changed to install equipment on a rented basis. One thousand dollars installation cost and $50 a month if concern buys flexible wrapped stick from subject. A higher monthly charge if they do not. First machine was installed in Phila. a few weeks ago. (Do not care to divulge the candy makers name until permission is granted). They mentioned that Minter and

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CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

Kroekel & Oetinger in Phila. are also interested. An extension type film like Goodyear rubber film must be used in this type machine as the product is stretched over sucker. While they pay 67¢ a lb. for rubber film it only takes 9 sq. inches and they wrap 3,000 suckers to a lb. An M.S.T. wrap would require 20 to 22 sq" so their cost is lower with rubber film and they get good clarity and protection. They use #100 for wrapping suckers and a film (No number) with a yield of 40,000 sq" for wrapping flexible stick. This high yield film did not work satisfactorily on sucker. Mr. Davis was anxious to pull away from Goodyear. Their relations are not too friendly) and use M.S.T. His heating elements on present machine will seal M.S.T. but they cannot get the same type of stretch wrap, which is necessary for this type wrapper. Anxious for DuPont to make a similar type film. They are calling on all candy concerns and expect to do some business. Many firms having been willing to buy if machine would wrap in wax paper which it cannot do any more than M.S.T.

5. Copy E.A.Wight.
Hope this answers all questions. If not write me what other details you wish.

PHILLIP HANDLING

Defendant's Exhibit No. 91

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL

CUSTOMER	SALESMAN	DATE LAST REPORT
E. J. Brach & Sons	W.A.H. Demme; W.T.Brown	11-5-47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
4656 W. Kinzie St.	11-19-47	

CITY-ZONE-STATE	CLASS	INDUSTRY
Chicago, Ill.	1-24	Candy

~~Dr. J. Sodeal~~
~~W. T. Brown~~

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THRU	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
E. O. Blomquist	V.P. Dir. Sales & Adv.	x		
Walter Lapham	Mdse.Mgr.	x		
Geo. Herberger	Asst.S.M.	x		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
TOTAL				

PRODUCTS AND CELLOPHANE WRAPPING

This File secured from
Hall of Records
Return to Box # 6405 pkg. 7

1. Choc. covered candy bar wrappers

2. Presented W. T. Brown's P.D. of various type wrappers to sound out future possibilities for us.

Blomquist gave little encouragement based on additional costs. He contends any added expenditure should go into the quality of the bar itself. He believes their present wrapper commands sufficient attention.

Lapham displayed interest in more attractive wrappers and would like to show a part of the bar. His contention that visibility sells their other chocolates and should sell more bars.

Herberger sided with Blomquist.

We discussed a cross section view of the bar on the wrapper. Lapham again thought well of this idea with no ennouragement from Blomquist and Herberger. They feel the wrapper is too small to do justice and besides the filling doesn't have appeal.

12-1-47 NTR
12-4-47 -7

M 5280

R-12727—REV. 2-47

they can save about $1100 a year on wrapper cost and since machine will cost only $700. figure it as a very worth-while investment.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

Have ordered trial lot (100#) from Shellmar for test purposes.

C (2) Charlie S. still looking for better bag than now used (Diaphane) -- feels protection afforded by standard bags not up to par and he is disinclined to pay premium price for Dobeckmun's prisomatic bag.

Still considering fabrication own bags, but not satisfied of savings involved since he infers Diaphane price "very reasonable." If however he could be convinced he could thus produce a better bag, believe he would go into it.

1, & 2. None.

3. (a) Preliminary check on Easter line.
(b) Recommended greater coverage on chocolate covered Easter specialties this coming season -- figured costs on basis seconds -- or if Sheeter works out okay, could handle quite economically. Cited growing coverage such specialties last season, added sales appeal thru added protection, etc.
(c) Definitely plans extended use "Cellophane" such items -- also planning some printed wraps on higher priced specialties, having sketches prepared now.

4. Follow above.

5. None.

M 5085

205

OVER

Defendant's Exhibit No. 92

SRG-1 REV. 4000-1-15-32

DUPONT CELLOPHANE
REG. U.S. PAT. OFF.

(D

Salesman Holland | Date 2-10-32 | No. 135

Firm Curtiss Candy Co. | Bus. Candy | Class 1-12

St. & No. 622 W. Diversey Boul | City Chicago | State Ill

Controlled by:

Final Decision by Otto Schneering, Pres | Contacted on this call? No

Buyer Herman Olsen | Contacted on this call? Yes

Type of Call* — Productive X | Service

Transparent Sheeting Used						Bo't From	Estimated Consumption-lbs. This Quarter	Estimated Consumption-lbs. Next Quarter
300	X	P.T.	X	Emb.	2nds	Milprint	25,000	30,000
450		P.C.		Sheets	X Misc.	DuPont	2,500	3,000
600		M.T.	X	Rolls	X			
H.W.		M.C.		1sts	X			

If using competitive material, state reasons why.

Items wrapped in Cellophane: 5¢ "Baby Ruth"bar, "Butterfinger" "By Jiminey" "Oh Henry" etc. "Baby Ruth" gum.

a. Sales tools used on this call:

Samples | Pack. Dev. | Trav. Display

Photo Album | Market Survey

Ad. Book | Post Campaign

b. Agreement account? Yes

c. Did you secure order? No If not, when?

d. Approx. date next call? 10 days

e. If service call, state nature below:

Understnd there is a possibility of discontinuing "Baby Ruth" gum. It has not made money for them and has been used chiefly as a deal proposition to help sell their candy

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
2-3-32	2-13-32	2-13-32	

Defendant's Exhibit No. 93

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL

CUSTOMER	SALESMAN	DATE LAST REPORT
Curtiss Candy Co.	W.A.H.Demme;W.T.Brown	11-7-47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1101 Belmont Ave.	11-17-47	

CITY-ZONE-STATE	CLASS	INDUSTRY
Chicago, Ill.	1-24	Candy

~~Dr Psaler~~
~~[illegible]~~
~~WT Brown~~
~~Weather~~

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THRU	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

RETURN TO CELLOPHANE TRADE ANALYSIS

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
W. S. Hassler	Pkg.Dev.	x		
J. E. Sersen	Purch.	x		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
TOTAL				

R-12727—REV. 2-47

1. Chocolate covered candy bar wrappers.

2. Presented W. T. Brown's P.D. of various type wrappers to sound out future possibilities for us.
Received little encouragement on the lower price bars because of additional cost over glassine.
They would seriously consider for bars with larger margin of profit because of added sales appeal, if they made such bars.
Of the various wrappers presented, they prefer the acetate lamination.

11-18-47 - ntr.
11-24-47 - ntr.
11-21-47 - ntr.

M5283

Defendant's Exhibit No. 94

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman Crowley Date 7-25-33 No 636

Firm General Candy Co. Bus Candy Class 1-12

St. & No. 4701 Armitage City Chgo. State Ill.

Controlled by

Final Decision by (Titles) G.H. Williamson, Pres. Contacted on this call? no

Buyer R.N. Rolleston Contacted on this call? yes

Others Contacted this call (Titles)

Type of Call—Productive X Service

Sources of Supply	Est. Cons.-lbs. This Quarter	If using competitive material, state type and reasons
Milprint	10,000	RETURN C.O. SALES RECORD

Items wrapped in Cellophane Oh Henry and Rosio bars.

Other products on which Cellophane could be used: (Note new products in work) Candy bars.

a. Sales tools used on this call:

Samples X Trav. Disp. Photos Pack. Dev.

Cons. Ads Trade Ads Mkt. Sur.

b. Agreement account? no

c. Did you secure order? no

d. Service and general remarks—below

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
6-22-33	7-27-33	7-27-33	

CREATIVE WORK DONE

New items on market since last call—distribution, potential.

Result of suggestions made on last call.

3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?

4. What is your plan for next call?

5. What assistance can organization give you?

1-2 - None.

3 - Amos N Andy new size bars in complete Cellophane wrapper to replace present glassine wrapper. They are giving attention to all costs at the present time and said they may change their entire line up. Costs on glassine wrappers, full Cellophane, revelation, etc. are being compiled for further study. Cited reasons for continuing and expanding their use of Cellophane. No immediate decision, but I will follow closely.

5 - None.

(436 - 212)

M 5285

This file secured from ... Records

6405
AC422

Cellophane Special Trade Report

SECTION TECHNICAL

Customer: GENERAL CANDY CO.

Salesman: W. T. Brown*-W. A. H. Demme tr

St. and No.:

Date: 11/18/47 | Date Last Call: | First Call: [X]

City - State: Chicago, Ill.

Business: Candy | W [ ] R [ ]

Number:

orig to dr file
~~Dr of Sales~~
~~letter~~

RETURN TO CELLOPHANE TRADE ANALYSIS

1. Persons Interviewed and Titles.
2. Report of Interview.
3. Competitive Information

1. George Williamson, Pres.; Lester Williamson, V.P. Chg. Sales & Adv.; Mr. Dickens, Asst. S.M.

2. Chocolate Covered Candy Bar Wrappers

Presented handmade examples of various combinations of Cellophane, using their "Oh! Henry" bar for comparison.

While present cost picture rules out any additional cost for wrappers, they admitted wisdom of evaluating any new materials or techniques. (Presently, ingredients and manufacturing costs represent 73% of retail price; adv., selling, packaging, etc., must come out of remaining 27%.)

They feel that future can take either one of two directions: 1) If ingredients and manufacturing become a much smaller part of price, fancier wrappers will be needed to meet competition; or 2) With ingredients and manufacturing a smaller part of price, jobber and retailer may get greater margin, thereby recreating need for the most inexpensive packaging.

They, particularly Geo. Williamson, took the "long range" view and indicated they would be glad to pursue our ideas further, when the right time comes.

They indicated partial visibility of bar desirable, if smearing of chocolate against film was kept at minimum.

For near future, they felt more expensive wrappers would be logical for 10¢ items of smaller volume.

4. Action You Will Take.
5. Action Desired of Others.
6. Copies of this report to:

4. No action to be taken unless requested.

6. D. E. Drew-W. G. Hunter-S. W. Hairsine
H. C. Broems-M. T. Callender (2), Chicago
W. A. H. Demme, Chicago
Nelson Allen-J. L. Jenemann
Candy File
W. T. Brown

NOV 25 1947

M 5287

4368

213

Defendant's Exhibit No. 95

This File secured from MAY 1 '50
Hall of Records
Return to

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL 6405 pg 30

CUSTOMER	SALESMAN	DATE LAST REPORT
John Horne Co., Inc.	W.A.H. Demme; W.T.Brown	10-24-47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1520 Lyons St.	11-18-47	

CITY-ZONE-STATE	CLASS	INDUSTRY
Evanston, Ill.	1-12	Candy

~~Dr J Salesh~~
~~W T Brown~~

DU PONT CELLOPHANE - SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THRU	PT. MT. CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

REPORT CALL BELOW
SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
John Horne	Pres.	x		
Thomas "		x		
W. F. O'Toole	P.A.			

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
TOTAL				

R-12727—REV 2-47

1. Choc. covered candy bar wrappers.

2. Presented W. T. Brown's P.D. of various type wrappers to sound out future possibilities for us.
Unable to develop long term or broad thinking; however, they are interested in improving their position and would like a more attractive wrapper.
They are very cost conscious at present, but indicated a desire to try cellophane over their prese wrap. We agreed to send sample roll for this purpose.

M 5288

Defendant's Exhibit No. 96

Defendant's Exhibit No. 97.

... In Chocolate Bars

4 out of 6 buy Riegel

Four of the six largest makers of chocolate bars buy Riegel Papers regularly

Among the makers of chocolate bars, and in many other fields, you will find that most of the sales leaders are regular Riegel customers. They buy from us simply because they know we can make packaging and industrial papers that combine technical excellence with economy and production efficiency. Their confidence in Riegel is an important reason why your company—whether large or small—should see if we can also help you. Riegel Paper Corporation, 342 Madison Avenue, New York 17, N. Y.

Riegel Papers We produce over 600 different packaging, printing, converting and industrial papers. If we don't have what you want, we can probably make it

(4370 215)

M 5289

~~"Baby Ruth" gum. It has not made money for them and has been used chiefly as a deal proposition to help sell their candy~~

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies to
2-3-32	2-13-32	2-13-32	

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

1. Herman Olsen, P.A.

2. Candy and gum

3. None known.

4. "Oh Henry" bar in Cellophane (very similar to "Oh Henry"

5. Orders have been placed and some wrapping done on "Baby Ruth","Butterfinger","By Jiminy" and other 5¢ bars. These will not be sent out to trade until 2-15-32, but have samples for Chicago Office now. Milprint has done a beautiful job of printing and we will arrange to tie in with Zeddies as soon as possible to encourage all publicity possible on use of Cellophane. Curtiss at one time advertised 8 million bars a day, but at present it is a question if they produce one million. However, they represent the second of the nationally known bars for Cellophane.

6. None.

7. None

8. Will hone Zeddies on Saturday upon his return to town and arrange our appointment for next week.

9. None.

M 5281

CELLOPHANE TRADE REPORT - DIRECTOR OF SALES COPY

DUPONT

☐ FIRST CALL

CUSTOMER: Los Angeles Nut House
ST. AND NO.: 722 Market Street
CITY - ZONE - STATE: Los Angeles 21, California

SALESMAN: J.E. Clark
DATE: 12-23-47
CLASS: 1-6

DATE LAST REPORT: 11-5-47
CONTROLLED BY PURCHASING AUTHORITY:
INDUSTRY: Nuts - Dried Fruit

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THRU	FT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT		Goodyear	Milprint	Rubber	0	0	0	3 M
Dobbeckman	1 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
N. L. Gold	Pres.			
Harold Siner	S.M.	x		X

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
Nuts				
Potato chips				
Dried fruit				
TOTAL				

R-12787—REV. 2-47

1. Competition.

2. Switching from D W 300 MST 52 and 53 to single wall of Plyofilm, because they claim Plyofilm bag holds nut meats fresher for the longer period of times. However, will be interested in running test with Deb. Tritect bag, for nut meats next Spring.

M 5074

4371

216

Defendant's Exhibit No. 98

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Charms Company	R. A. Dunn and N. A. Gow	6/9/48

ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
Bloomfield Ave., & Grove St.,	6/10/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Bloomfield, N. J.	1-24	Candy

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., INT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

RETURN TO CELLOPHANE TRADE ANALYSIS

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
S. Byrnes, Production Supv.		X		
R. Cameron, V.P. Production		X		
M. L. King, Plant Manager		X		
S. Cerruto, Production Foreman		X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C *	ANNUAL POTENTIAL
TOTAL				

JUN 15 1948

R-12727 — REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1a) Investigate complaint.

b) Follow up suggestion use MT 35 vs. MST and 300 vs. 450.

2a) See #3.

b) Next order to include quantity MT 35 and 300 test purposes.

3a) Informal Complaint -- Uneven gauge causing off-register printing observed. Film breaks at splice causing 1/2 hr. delay one out of 3 rolls. Advised specifications would be set up all future orders for printing.

COMPETITION

a) Buyers enthusiastic over new foil box package of assorted tablets. Pointed out negatives -- hard to open, and cuts fingers, poor reproduction tablets on foil -- no visibility.

b) Adopting straight foil wrap plain tablets, continuing cellophane-foil lamination, assorted tablets (straight foil 30% less cost). Production over 50% assorted packages on 100-M boxes/week.

Machine Information -- renting Wright machine $250. per month for foil box package; financed by Foil and Wright.

H 5713

4372

217

Defendant's Exhibit No. 99

343342 O - 55 - vol 6 - 36

4373

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

Dept Sales
Seller
Lake

CUSTOMER		SALESMAN	DATE LAST REPORT
Charms Company		R. A. Dunn	6/30/48
ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY	
601 Bangs Avenue	8/20/48		
CITY-ZONE-STATE	CLASS	INDUSTRY	
Asbury Park, N. J.	1-24	Candy	

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR	3RD QTR. PUR	4TH QTR. PUR.
DU PONT	130-M	0						

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

RETURN TO CELLOPHANE TRADE ANALYSIS

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
W. W. Reid, Jr.	Ch. Bd.	X		
W. W. Reid III	Pres.	X		
W. Growney	V.P.	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-1[illegible]—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

AUG 30 1948

1a) Colored 2nds.
b) Overwrap of 20 package Charms box.

2a) Considering printing sheets for colored "Parasol" wrapper. Writer pointed up overtaxing of printing press with all Xmas items -- so may decide to use colored 2nds.

b) Are adopting our suggestion for film overwrap of 20 count box on new tablet flavors (grape, rum and butter, butterscotch and cherry) for present. If successful, will adopt on all tablet packages. However, will double wrap with 300 MST-54 instead of suggested 600 MST.

3. Also have ordered sufficient boxes for trial on flat pack overwrap recently. Suggested as improvement over present 20-pack.

COMPETITION -- Reynolds Metal Co. - CONFIDENTIAL
Have adopted Reynolds' thermoplastic coated foil wrapper of Charms tablets on solid flavors. Will continue with Marathon's laminated foil and prtd cellophane wrapper on assorted Charms for present. Saving of 20% on coated foil - appearance very good. Claims seal adequate. Desire information kept from Marathon in order not to jeopardize source of supply.

M 5114

Defendant's Exhibit No. 100

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL

CUSTOMER: DSL KEY CANDY CORP.

ST. AND NO.: 210 Tatnall St.

CITY, ZONE, STATE: Wilmington, Del.

DATE: 12/14/48

CLASS: 1-3

SALESMAN: J. S. TAYLOR

CONTROLLED BY PURCHASING AUTHORITY

INDUSTRY: Candy

DATE LAST REPORT: 9/3/48

DU PONT CELLOPHANE BUYS FR	USE THIS QTR	MANUFACTURER	COMPETITIVE MATERIALS BUYS THROUGH	PT MT CA ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR PUR
DU PONT	X				0	0	0	0

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

	TITLE	INT VD	MAIL TO	M L CHGE
Leon Hirsch	Mgr.	X		
Joseph Waldman	Prop.			

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM CODE	R S C	ANNUAL POTENTIAL
Pops	12M	MSO-MST	R/S	12M
TOTAL				

* ROLLS SHEETS CONVERTED

1. Check machine operation and performance of Cellophane.

2. Machine seems to be operating fairly efficiently. Have had no trouble with recent shipments of Cellophane. However, customer has a quantity of stub rolls from June and July shipments which they are unable to use. H. A. Lesher is following this matter.

3. Subject has purchased another pop machine - second hand (Package LP). Delivery next week. This will naturally reduce sheet needs considerably.

Business very good. Hirsch stated that more customers were specifying foil wrap for individual pops for spring and summer delivery. He says trade beginning to feel that even the darker colors of Cellophane show too much sweating and stickiness.

Mr. Hirsch has accepted a position with another firm. However, he will serve here in an advisory capacity and will cohtinue to handle all buying at least temproarily.

M 5117

4374

219

Defendant's Exhibit No. 101

DU PONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL

CUSTOMER	SALESMAN	DATE LAST REPORT
hw PLANTERS NUT & CHOCOLATE CO.	D. H. CHILES	10/8/48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
212 Johnson Ave.	1/7/49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Suffolk, Virginia	1-12	Nuts

Sheets
Letter
L

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC	1ST QTR. PUR	2ND QTR. PUR	3RD QTR. PUR	4TH QTR. PUR.
DU PONT	100M	Sylvania	Direct		0			
Milprint	50M							
Shellmar	25M							
Dobeckmun	25M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M L CHGE
G. B. Stott	Dir. Purchasing	X	MS	

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R & C	ANNUAL POTENTIAL
Peanuts 5¢ & 10¢	1,000,000	MST-53	R&C	1,500,000
Mixed Nuts	20,000	"	R-C	30,000
Candy Bars	0	MST-54	R	30,000
Peanut But.Sand.	12,000			15,000
TOTAL				

RETURN TO "[illegible]" [illegible]IS

1. (a) Film needs for January and February and first quarter outlook.
   (b) Business trends and anticipated business for 1949.
   (c) Effect price of peanuts will have on their consumers or wholesalers.

2. (a) Stott states they have a rather large inventory and are trying to get this adjusted. The large inventory was gotten largely due to their questioning our supply and having no desire to get caught short. Now that we can supply unlimited supply small rolls will adjust same.

   Have turned down all film offered for January other than 500 lbs. for peanut butter sandwiches.

   Will need in their opinion all film offered for February and March.

   (b) December 1948 was the slowest month they have ever had. Stott states the bottom fell out completely. This upset their plans

M 5139

R-12727 * R-ROLLS S-SHEETS C-CONVERTED

Defendant's Exhibit No. 102

CUSTOMER PLANTERS NUT & CHOCOLATE CO.

SALESMAN D. H. CHILES

ST AND NO

DATE 1/7/49

CITY-ZONE-STATE Suffolk, Virginia

CLASS

completely. They are of opinion business will pick up as 1949 has started out exceptionally well. Far ahead of 1948 to date.

Mr. Stott is of opinion their business in 1949 will exceed 1948 substantially.

(c) Price of peanuts is effecting the market to a great extent. Is the general opinion that until price becomes somewhat normal peanuts will not see their best or top selling peak.

Present and past rainy spells have caused many peanuts to mold in the stack before thrashing. This has caused no shortage as the high prices have kept the demand down.

3. Are wrapping all peanut candy bars in wax. Stott informed me that their sales dropped so much when wrapped in Cellophane until they were afraid they would have to take the item from the market.

Are using no Pliofilm at this time.

M 5139

DU PONT

FIRST CALL

CELLOPHANE TRADE REPORT - DIRECTOR OF SALES COPY

CUSTOMER	SALESMAN	DATE LAST REPORT
Curtiss Candy Co.	W. A. H. Demme	6-30-49

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1101 Belmont Ave.	8-2-49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Chicago, Ill.	1-48	Candy

TRS

42-2

DU PONT CELLOPHANE — COMPETITIVE MATERIALS

SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT. MT.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	90,000	Goodyear	Direct	140M	50,000	40,000	40,000	
Milprint	15,000		Shellmar	140M	-	-	1,000	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT.	MAG.	M.L.
W. S. Hassler	Pkg.Dev.	X		
J.E.Sorsen	Purch.	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FOR CODE	R.S.	ANNUAL POTENTIAL

280,000 per Q

1,120,000

Lose 40,000 per Q

TOTAL M 5290

1. (a) Multiple candy bar units - box vs. Cellophane.
(b) Marshmallow bag test with pliofilm.
(c) Xmas units.
(d) Competition - Sylvania.

2. (a) 6 bar units will be released next week in die-cut box as well as Cellophane on a test basis to see which unit sells best. Box costs total $9.72 against $5.71 for Baby Ruth bars. We pointed out the necessity for the boxed units to outsell Cellophane by more than 50%.

(b) They are planning a local (Chicago) market sales test using pliofilm for marshmallows. Postal card questionnaire will be used to get dealer-consumer reaction.

Goodyear's plan to reimburse Curtiss approx. $1700. the cost of changing a Simplex machine to use pliofilm was the influencing factor in this move.

Curtiss will test polythene on this machine when the change has been completed.

(c) Promoted Xmas units. They have heavy carry-over of trays and boxes from last year so will use them again this season.

(d) Competition from Sylvania hasn't changed any with this account. They still claim they can't use it and specify Du Pont on all converted business.

Defendant's Exhibit No. 103

Defendant's Exhibit No. 104

CC: R. R. SMITH - C. F. BROWN

Wilmington, Delaware,
August 23rd, 1949.

R. J. CROWLEY,
Chicago

CURTISS CANDY CO.,
Chicago, Illinois.

The inroads of rubber in this account, according to Bill Demme's report dated August 2nd, have reached very substantial proportions. In fact, if I read this report correctly, Curtiss is now using greater quantities of rubber film than they are purchasing from us and converters of our product.

This is of real concern to us and we feel no stone should be left unturned to change this condition. The first move in this direction is that we would like to know from you on what products Curtiss now uses rubber and the amount on each. This information should include the type of rubber film employed on each product.

Will you please send this information on to us as promptly as possible? What we have in mind is to look our hand over to determine what we may have to offer Curtiss to combat rubber competition.

W. J. HARTE.

WJH:CP

M 5290

Defendant's Exhibit No. 105

July 28, 1927

C-5

Mr. R.M. Horsey.
Asst. Sales Manager
New York City

Subject:. GENERAL SEAFOODS CORPORATION

A comparison of the permeability to moisture of our waterproof Cellophane with that of a high grade vegetable parchment paper gives the following results.

	Permeability*	
	After 24 hrs.	After 48 hrs.
W.P.Cellophane	18	25
Parchment	843	938

*Expressed as grams of water vapor passed through 1 sq. centimeter in 1 hour, multiplied, in order to give a whole number, by 1,000,000.

You will note that at the end of a 48 hour test, the W.P.Cellophane permits only 1/37 as much moisture to escape as does the parchment paper.

We believe that this data should be of assistance in convincing the General Seafood Corporation of the protective value of our product.

CHEMICAL DIVISION

Per: PSW
P.F. Webster

PFW:GLA

M 5292

Defendant's Exhibit No. 106

cc: Dr. Benger

March 22, 1929

Mr. Clarence Birdseye,
General Seafoods Corp.,
Gloucester, Mass.

Dear Sir:

In reply to your wire this week, we are enclosing below data which we have taken from tests on and off in the past, showing the relative vapor-proofness against water vapor of various papers, as compared with Moistureproof Cellophane.

You will note that the different waxed papers vary considerably among themselves and we have found this to be generally true. We have found that many waxed papers on the market are either coated with such a poor quality of wax or with such a small amount that they offer but little real resistance to the passage of moisture vapor. On the other hand, we find that there are not a great many waxed papers on the market, or at least in use, as wrapping materials which possess a degree of resistance to moisture vapor of the same order as that of Moistureproof Cellophane. There are one or two waxed papers which I have pointed out below as being very exceptional, but it should be understood that these several papers, insofar as they are used generally throughout the trade where wrapping is desired, are curiosities rather than the general rule. The best waxed paper we have come across has been that used by the National Biscuit Company and by the Loose-Wiles Biscuit Company. Since these organizations maintain a staff of men who study wrapping methods entirely, it is not surprising to find them using the best. However, there are very, very few products we have run onto that have received anything like the attention to the method of wrapping and the selection of wrapping material that those of the several large biscuit companies have.

We have found that the temperature at which the wrapping material is tested has a profound effect on the results obtained and we, therefore, carry

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out all of our tests at a fixed temperature of 101°F. and the results presented below are good for this temperature. This permits testing the material under its most unfavorable conditions and it is rather generally true that if the temperature is dropped the amount of water vapor passed by the wrapping material decreases. In order to clarify the information herewith presented, the method of testing should be considered and we are giving you this herewith.

Our standard test for moisture permeability is illustrated in the pencil drawing I have enclosed, except for the fact that I have drawn a dessicator where we ordinarily use a large constant temperature oven, capable of holding 40 or 50 tests at one time. However, the principle is the same; the paper to be tested is sealed tightly over the top of a glass crystallizing dish. One edge is then broken just enough to allow the insertion of a pipette. About 10 or 15 cc. of water are placed in the dish after which the broken edge is tightly sealed again. These dishes are placed in the constant temperature oven which is regulated to within 1/2°C. and in which we have calcium chloride or concentrated sulfuric acid distributed around in places so that the atmosphere in which the dishes are exposed represents a practically zero relative humidity. The atmosphere inside of the dish, of course, represents 100% relative humidity. The air in the oven or the dessicator is constantly agitated by means of a small fan connected to a small motor. The covered dishes are weighed up on a balance to an accuracy of one milligram before the test and then placed in the constant temperature oven for 24 hours after which they are removed, brought to room temperature and again weighed. The loss in weight is calculated back to the grams of water vapor lost per square meter of surface exposed per day.

Results presented below were obtained by the above test and the figures are calculated as indicated, that is, in grams of water vapor passed per square meter area per 24 hours at 101°F.

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FOR REFERENCE ONLY

TABLE

SHOWING RELATIVE EFFECTIVENESS OF VARIOUS WRAPPING MATERIALS AGAINST MOISTURE

Wrapping Material	Moistureproofness
Regular Cellophane	1920
Lightly Waxed Parchment Waxed one side (Hammersley Paper Co.)	1350
Glassine Paper - unwaxed	1250
White Parchment Paper - unwaxed (Used for butter wrap)	1130
White Waxed Glassine (Used for bread wrapper)	384
White Waxed Paper (Bread wrap - General Baking Co.)	220
White Waxed Paper (Bond Bread)	210
Brown Waxed Paper (National Biscuit Co. - saltines)	100
Waxed Glassine Paper (From Kellogg Corn Flakes)	70
Waxed Kraft Paper (From Grape Nuts)	42
Waxed Glassine (Ward Baking Co. for cakes)	36
Waxed Kraft Paper (National Biscuit Co. - graham crackers)	35
*Waxed Glassine (Gremmon Baking Co.)	17
*White Waxed Paper (Loose-Wiles Biscuit Co.)	17
*Waxed Kraft Paper (National Biscuit Co.)	12
Moistureproof Cellophane	5

*These are among the very best waxed wrapping papers that we have run across and tested in any of our work.

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In the above table we have given you, for your information, the source of the papers used and the packages on which they were used. I do not believe it would be wise in your article to give the names of the manufacturers using the particular paper or the name of the package on which it was used, since I believe the journals usually object to this kind of information. I think it is also objectionable to the manufacturers whose material is quoted. The papers might be numbered, for instance, and it might be generally stated that they were taken from a variety of packages representing some of the poorer grades of paper, some of the average grades and three of the very best, which in all of our tests on hundreds of materials were found. I trust you will appreciate our position in making this request that the name of the manufacturer using the waxed paper in question be not mentioned.

If there are any other points of information which we are in a position to give you or any further explanation of these figures, we will be pleased to supply you with them.

Very truly yours,

FILE COPY

V. H. Church,
ASSISTANT CHEMICAL DIRECTOR.

WHC:BW

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Defendant's Exhibit No. 107

Some Scientific Aspects of Packaging and Quick-Freezing Perishable Flesh Products

II—Packaging Flesh Products for Quick-Freezing[1]

Clarence Birdseye

General Foods Company, Gloucester, Mass.

BECAUSE many flesh products are decidedly seasonable, and because it will be desirable to package such products largely during times of oversupply, the finished product should be capable of prolonged cold storage at or near the point of manufacture. Therefore, let us consider some of the principal sources of trouble during storage.

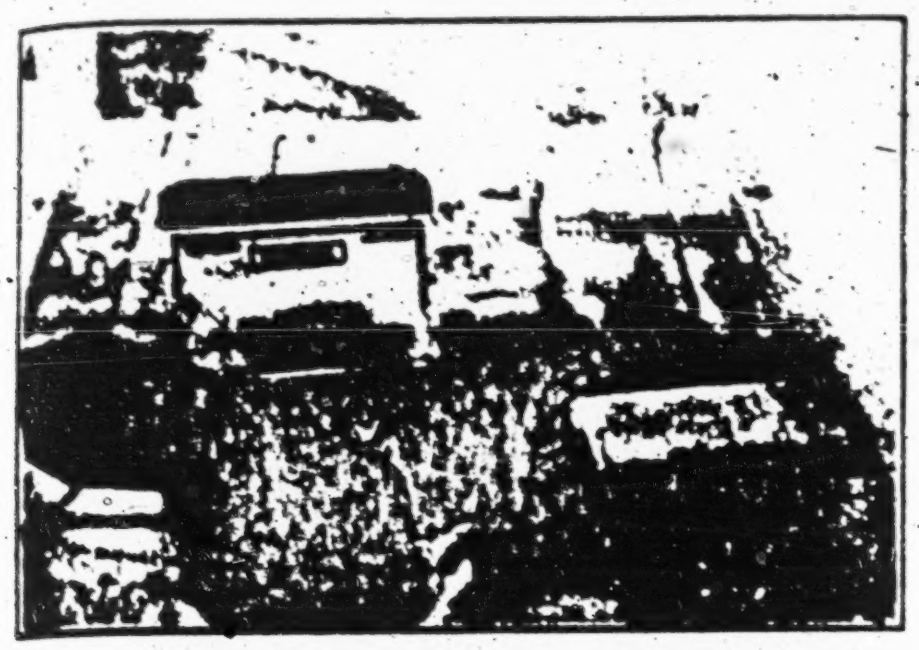

Figure 1—One-Pound Carton Containing Three Portion-Size Haddock Fillets, and Separately Wrapped Haddock Fillets Assembled into a 10-Pound Carton

Causes of Deterioration

Desiccation is one important cause of deterioration and is due largely to the lack of constancy and uniformity of temperature throughout the storage room. Heat penetrates into the room through the walls and open doors and is given off by lights and by the bodies of workmen; and this heat is absorbed by the refrigeration pipes. The stored product is of course warmer than the pipes and the saturation point of the air is lower at the pipes than at the product. Thus moisture is continuously absorbed from the product, carried by convection currents to the refrigeration pipes, and deposited there in the form of frost. Obviously this moisture evaporation from the fish is more or less in direct proportion to the surface area exposed. The extent of this evaporation may be seen from Table I.

The experiments reported in Table I were carried out with unglazed fish under European storage conditions, at a temperature of −7° C. and 85 to 90 per cent humidity. Petterson[2] says that in Europe fish are usually frozen suspended individually in air at from −15° to −7° C., more often at the higher temperature. In the United States, however, only approximately 25 to 40 per cent are frozen individually, the remainder being frozen in blocks; and sharp-freezer temperatures are very low—from −23° to −34° C. For these and other reasons, the desiccation shown in Table I is very much greater than is usual under the United States practice of sharp-freezing and cold-storing whole fish.

As will be noted from the table, the factors of size, shape, and leanness or fatness control the rate of evaporation to a certain extent. A small fish dries faster than a large one of the same species. Lean fish dry faster than those protected by a subcutaneous layer of fat. Yet the eel, which is fattier than the mackerel, dries faster during the first stage, because of the larger ratio of surface to bulk. Since these figures are according to European technic, they are slightly higher than will be the case in our domestic freezers, but they illustrate the great necessity for protection against evaporation during storage.

Table I—Loss in Weight during Freezing and Cold Storage of Whole Fish*

Kind of Fish	Initial Weight	Number of Days Stored							
		10	20	40	60	80	100	120	140
	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams
Codfish	3837	3 9	8 9	18 0	21 0	..	...	..	..
Cod	2874	7 4	11 0	18 3	25 5	..	..	..	..
Haddock	858	11 4	18 2	28 6	37 3	43 0			
Haddock	318	17 0	27 6	42 7	53 0	57 5	60 0	61 6	62 3
Plaice	870	9 6	16 6	25 1	37 3	44 5			
Plaice	179	15 1	26 3	43 3	54 3	62 0	64 0	65 5	66 3
Mackerel	421	3 3	7 8	14 9	19 9	24 2	27 2	29 4	31 1
Eel	349	3 3	12 3	17 7	20 9	22 6			

* Zentral Einkaufsgesellschaft m. b. H. Berlin, 1918.

Oxidation is another prolific source of trouble, for the fats of most flesh products are readily oxidized by contact with the air during cold storage. The rate of oxidation decreases with the temperature of the storage room, and increases as the fat-containing tissues are broken down by autolysis. It is most rapid on exposed cut surfaces, and may best be held in check by a practically air-tight protective coating and low storage-room temperatures.

The natural bright color ("bloom") of flesh is often changed during prolonged cold storage to a brownish tinge. This is caused by conversion of the hemoglobin of the product to methemoglobin through contact with the gases of the air.[3] Discoloration, like oxidation, is most pronounced in exposed surface areas.

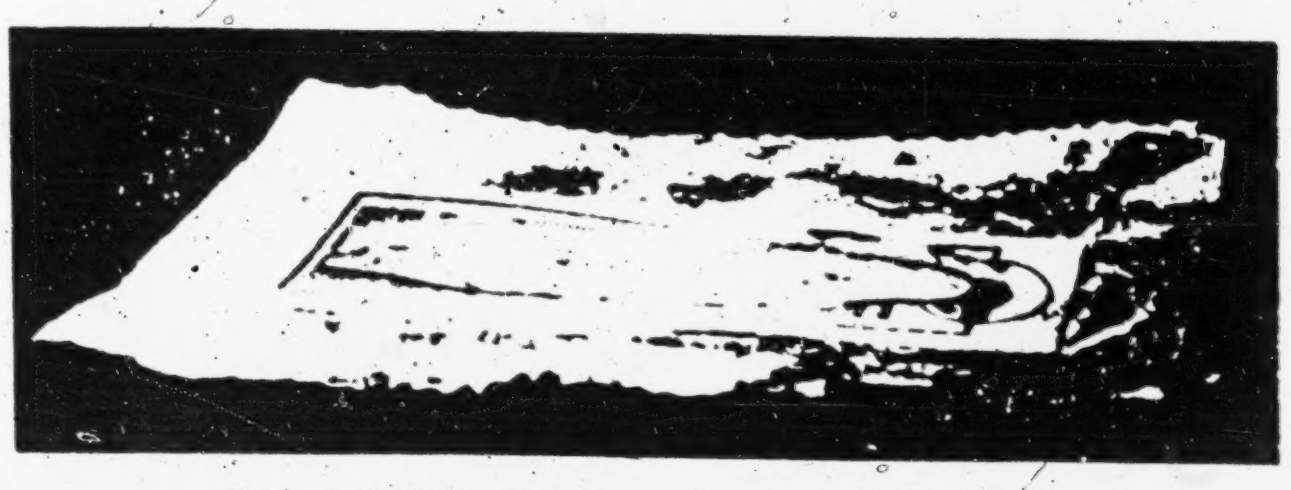

Figure 2—Individually Frozen and Wrapped Haddock Fillet

Flavor is another quality which may suffer during prolonged storage and subsequent distribution. This is due, among other causes, to desiccation, evaporation of volatile

[1] Received April 15, 1929.

[2] Peterson, *Refrigerating World*, September, 1924.

[3] Taylor, "Refrigeration of Fish," Appendix VIII to report of U. S. Commissioner of Fisheries for 1926, p. 522.

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substances, oxidation of fats, and absorption of odors from contaminated storage rooms, refrigerated freight cars, and dealers' ice boxes. All these factors are minimized by reducing the exposed surface area and utilizing an air-tight protective coating.

Heat leakage into a cold-storage room, refrigerated car, or insulated shipping container is in direct proportion to the surface exposed; and the amount of heat which the product can absorb without thawing is dependent upon the quantity of the product. The greatest care must be taken to prevent thawing of carloads of quick-frozen products during transfer

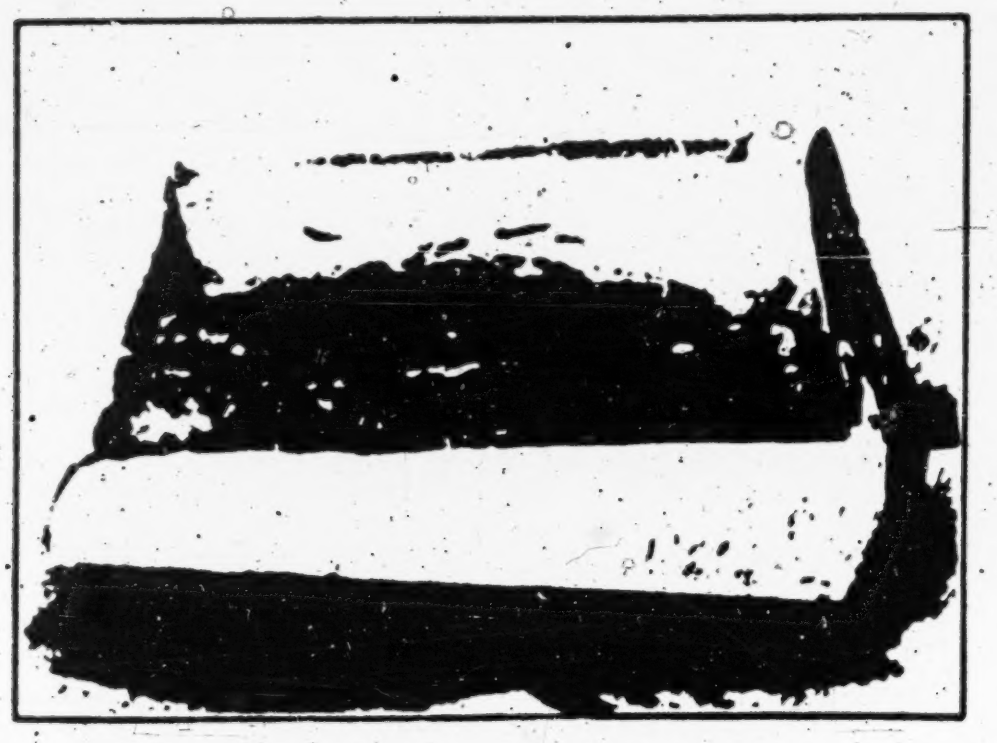

Figure 3—Individually Frozen Salmon Fillets

from one storage point to another, for if the product is allowed to soften it will be slow-frozen when it again enters storage. Therefore, it is essential that the product be packed as compactly as possible.

Bacterial contamination of flesh products is difficult to control, and it is obviously desirable that the products be protectively packaged as soon as possible after having been dressed.

Manufacturing and Marketing Requirements

The requirements of the manufacturer, distributor, and consumer must be met satisfactorily if quick-frozen, packaged, perishable flesh products are to become a commercial success. From the manufacturer's viewpoint the product must be packed so as to facilitate quick-freezing and in such a manner as to require the minimum of wrapping and cartoning material for a given weight of product. Economical shipment from manufacturer to dealer requires that the individual packages be packed in strong, dry, inexpensive, non-returnable, heat-insulated shipping containers, which must be rectangular and packed solidly full.

The retail dealer will insist that the individual packages themselves be clean, dry, and odorless; retain their attractive appearance after being thawed; and require the minimum weighing and wrapping before delivery.

Most important of all, perhaps, are the demands of the ultimate consumer. First among these must be uniform high quality—the goods must be packaged at or near the point of production and must have the flavor, juiciness, color, and appearance characteristic of the best unfrozen materials. They must be absolutely clean to start with, sanitarily handled throughout the production process, and effectively protected from contamination until they reach the consumer's kitchen. They must keep fresh the maximum time after thawing, and be free from inedible portions, ready to cook the moment they are taken from the package, of convenient size, and trade-marked in such a manner that the brand carries through to the consumer's kitchen.

Packaging before and after Freezing

It will have become apparent from the foregoing that a successful package of quick-frozen flesh products must be completely full, with the minimum amount of air within the package. This can be accomplished only by packing the product first and freezing it afterward. Unfrozen flesh products—even those containing a considerable proportion of large bones—are comparatively soft and yielding, and the individual cuts can be made to fit together so as to fill compactly the carton in which they are packed. After such products are frozen, however, they are unyielding and usually of irregular shape, and therefore cannot be compactly assembled into a package. These facts are well illustrated in Table II.

Table II—Space Occupied by Certain Frozen Foods

Product	Volume Occupied by One Pound		
	Unfrozen	Packaged and then frozen	Frozen and then packaged
	Cubic inches	*Cubic inches*	*Cubic inches*
Haddock fillets	26 to 27	29 to 30	84 to 90
Salmon fillets	26 to 27	29 to 30	64 to 70
Codfish steaks	26 to 27	30 to 31	51 to 58
Shelled oysters	27 to 28	29 to 30	56 to 59
Sea scallops	26 to 27	29 to 30	57 to 59
Lamb kidneys	26 to 27	28 to 29	38 to 43
Lamb chops	26 to 28	30 to 31	44 to 48
Sirloin steaks	26 to 28	29 to 30	45 to 47

It is significant that a carton of product packed before it is frozen usually exposes very much less surface area than the same weight of that product frozen before it is packaged. Thus, in a one-pound package of haddock fillets, $1^7/_8 \times 3 \times 5$ inches (Figure 1), composed of three portion-size pieces

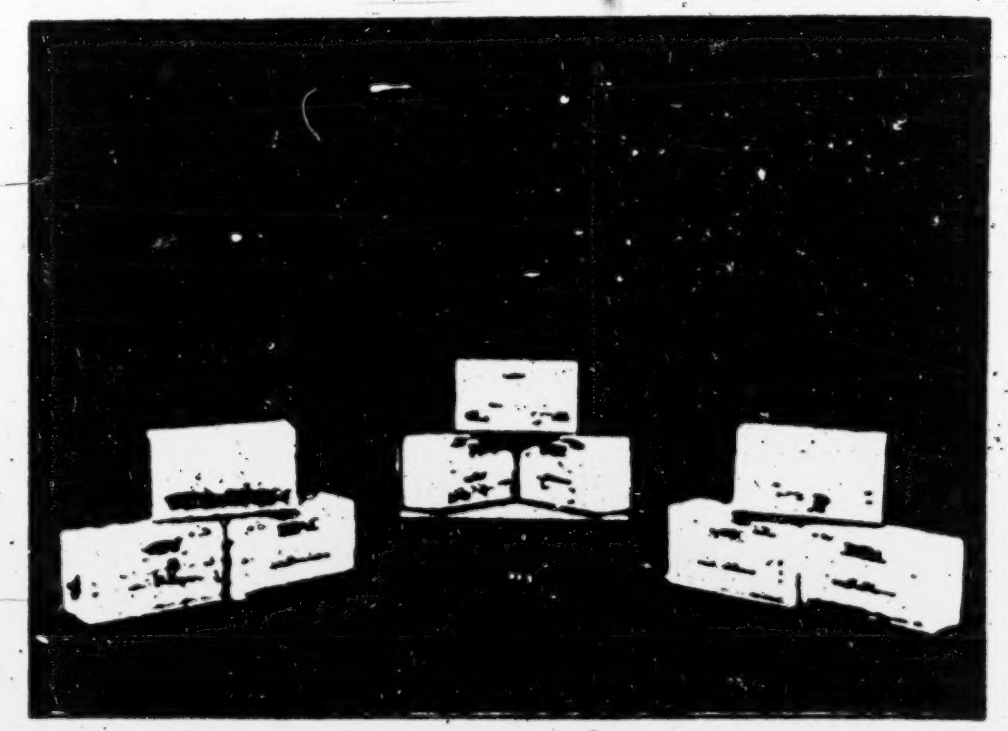

Figure 4—Insulated Container for Shipping

of fillet fitting snugly against each other and completely filling the package, the surface exposed to desiccation and oxidation amounts to only 60 square inches—i. e., to the area of the ends, sides, top, and bottom of the package. Two half-pound haddock fillets laid out flat and frozen individually present approximately 177 square inches of surface area. These same two half-pound haddock fillets separately wrapped and then assembled into a ten-pound container before being frozen will have a total surface area of 106 square inches—and in actual practice only about an average of 25 per cent of this area would be exposed at the surface of the block of product within the carton.

A moisture-vapor-proof and air-tight covering has been

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Defendant's Exhibit No. 107

Defendant

shown to be another essential feature of packaged quick-frozen flesh products. This is an additional reason why the products should be packaged before being frozen, because both the necessity for and the cost of wrapping increases with the amount of surface which must be protected. The 14-ounce individually frozen haddock fillet shown in Figure 2, placed on a sheet of cardboard and then wrapped in parchment paper, required 280 square inches of wrapping material; while a fillet of the same weight individually wrapped and then packed with others in a carton required only 127 square inches of wrapping to cover it completely. The individually frozen salmon fillets shown in Figure 3 occupied 66 cubic inches per pound of fillets, and required 188 square inches of wrapping material.

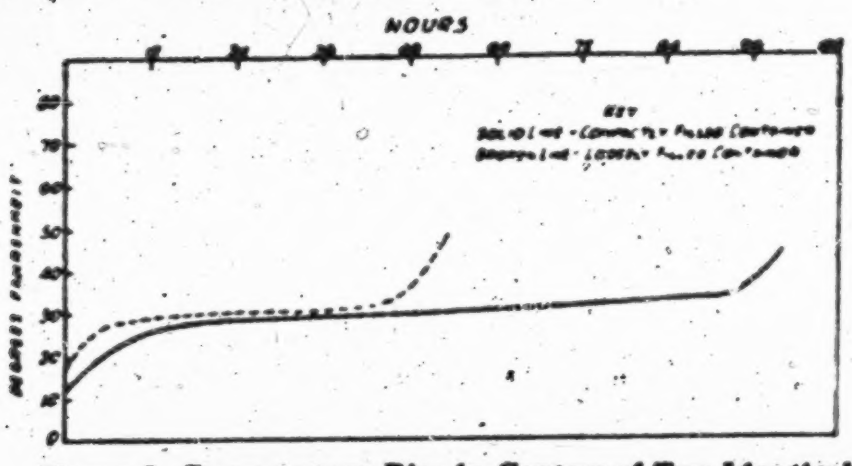

Figure 5—Temperature Rise in Centers of Two Identical Corrugated Shipping Containers, One Compactly Filled with Two Ten-Pound Cartons of Haddock Fillets Packaged before Being Frozen and the Other Loosely Filled with Single Fillets Frozen Separately before Being Packed. Average Room Temperature, 68° F.

Kinds of Packaging Materials

Now let us consider the relative merits of various wrapping and cartoning materials available for use in packaging quick-frozen flesh products. The first material to be used extensively for this purpose was pure vegetable parchment paper, paraffin-coated on both sides. This is a thoroughly excellent wrapping material, one of its most valuable characteristics being that it will not disintegrate in the presence of water—it can, in fact, be boiled for a prolonged period without becoming weakened. Ordinary transparent cellulose sheets—*e. g.*, Cellophane and Crystal Klear—have been used for wrapping flesh products and have the benefit of displaying the products to excellent advantage. This class of material has, however, proved unsatisfactory, chiefly because it is not moisture-vapor-proof, and the sheets adhere tightly to each other both while the product is frozen and after it has thawed.

Compact cardboards, containing a minimum of air spaces and cold-waxed on both sides, have been extensively used for cartoning quick-frozen flesh products and have proved very satisfactory. It is probable that the inclusion of a thin asphalt layer in the center of the board considerably increases its vapor-proof value.

Glassine paper, paraffin-coated on both sides, is being successfully used as a heat-sealed wrapping for the outside of small cartons. This material has a relatively high resistance to the passage of moisture vapor and is fairly transparent. However, it loses strength when kept wet for a prolonged period and is therefore not suitable for use in direct contact with a product.

Probably the most nearly moisture-vapor-proof and air-tight wrapping available is an improved cellulose material known as Moistureproof Cellophane. This material is almost completely transparent and has a very high resistance to the passage of moisture vapor and other gases. The individual sheets do not stick together and the material is in itself water-tight and greaseproof. It is, however, more expensive than other wrapping materials, and its field of usefulness is limited by that fact. The relative moisture-vapor-proofness of some of the above materials was determined as follows:

The paper to be tested is sealed tightly over the top of a glass crystallizing dish. One edge is then broken just enough to allow the insertion of a pipet. About 10 or 15 cc. of water are placed in the dish, after which the broken edge is tightly sealed again. These dishes are placed in the constant temperature oven, which is regulated to within 0.5° C. and in which calcium chloride or concentrated sulfuric acid is distributed so that the atmosphere in which the dishes are exposed represents a practically zero relative humidity. The atmosphere inside of the dish, of course, represents 100 per cent relative humidity. The air in the oven or the desiccator is constantly agitated by a small fan connected to a small motor. The covered dishes are weighed to an accuracy of 1 mg. before the test and then placed in the constant-temperature oven for 24 hours. They are then removed, brought to room temperature and again weighed. The loss in weight is calculated back to the grams of water vapor lost per square meter of surface exposed per 24 hours, at 38.33° C.

Table III—Relative Moisture-Vapor-Proofness of Several Wrapping Materials*

Sample	Wrapping Material	Moisture-Vapor-Proofness
1	Regular Cellophane	1920
2	Parchment, lightly waxed one side	1350
3	Glassine, unwaxed	1250
4	Parchment, unwaxed	1120
5	White glassine, waxed both sides	354
6	White waxed paper, waxed both sides	220
7	Brown waxed paper, waxed both sides	100
8	Glassine, waxed both sides	70
9	Kraft, waxed both sides	42
10	Glassine, waxed both sides	38
11	Kraft, waxed both sides	35
12	Glassine, waxed both sides	17
13	White waxed paper, waxed both sides	17
14	Kraft, waxed both sides	12
15	Moistureproof Cellophane	5

* These papers were taken from a variety of packages most of which contained bread or other bakers' products. The list includes some of the poorer grades of paper, some of the average grades, and three of the very best of the hundreds which were tested.

The results are shown in Table III. Although no tests have been conducted at temperatures of less than 10° C., there is excellent reason to believe that the moisture-vapor-proof qualities of Moistureproof Cellophane improve as the temperature is lowered to that at which frozen flesh products should be cold-stored; while the general tendency of waxed papers seems to be toward becoming relatively less vaporproof at very low temperatures—probably because at low temperatures the paraffin tends to contract or crystallize, thereby less completely covering the paper.

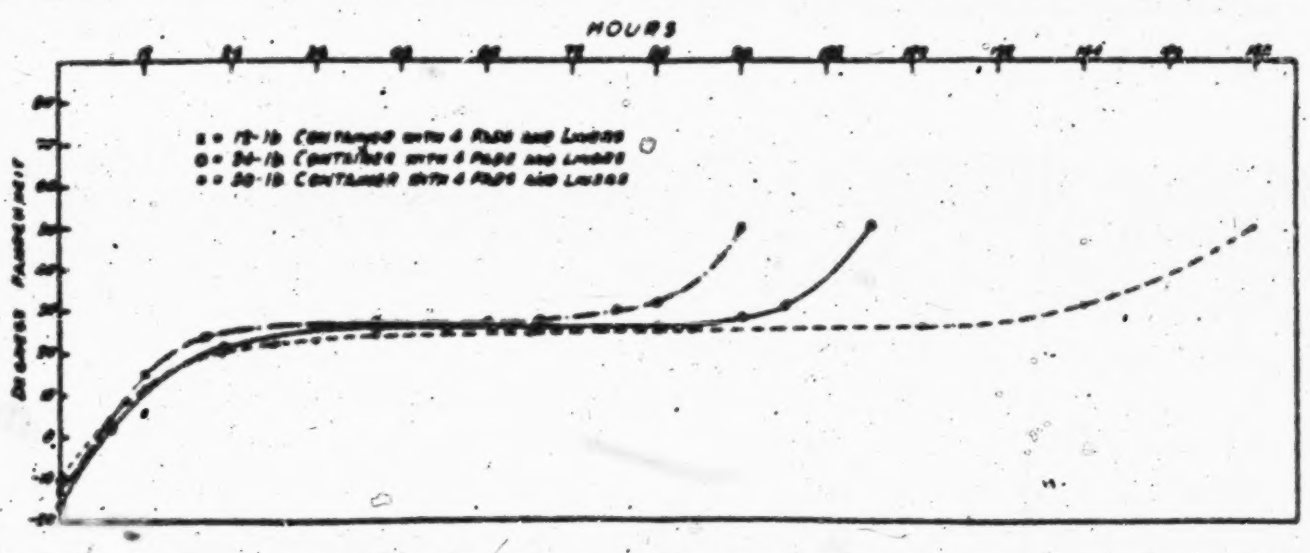

Figure 6—Temperature Rise in Center of Corrugated Shipping Containers, Filled with One-Pound Cartons of Frozen Haddock Packed before Being Frozen. Average Outside Temperature, 65° F. Container Similar to That Shown in Figure 4

Insulated Shipping Cases

For commercial reasons it is desirable that inexpensive non-returnable insulated shipping cases be used in distributing

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quick-frozen packaged products. This precludes containers from such materials as cork board, balsa wood, and the various proprietary insulating materials.

Corrugated fiber board has been found to be a very satisfactory material from which to manufacture insulated shipping containers, and considerable quantities are now being used for that purpose. It has approximately the same heat-insulating value as cork board or balsa wood, is light, strong, and inexpensive. Fiber board may be made with either straw or chip corrugations, and with kraft, jute, chip, or straw liners. It has approximately the same heat-insulating value no matter from which materials it is made.

Although the construction and thickness of the corrugated containers used by different producers of quick-frozen products vary greatly, an excellent container may be made by placing four pads or liners within an ordinary slotted carton of the proper dimensions (Figure 4). The container should be as nearly cubical as possible, so as to expose the minimum surface to heat penetration: and, when possible, the corrugations in the liners should run horizontally so as to lessen convection currents. Obviously, the shipping container should be packed solidly full, because the heat leakage into the container is approximately in proportion to its surface area, whereas the amount of heat which can be absorbed by the product with a given temperature rise is in proportion to the volume of product (Figure 5).

Figure 6 indicates the effectiveness of corrugated fiberboard cases in protecting their contents from outside heat. It will be noted that the contents of the 50-pound container required 7 days to reach a temperature of 50° F., at which time the fish was still perfectly fresh.

The Condensation of Steam

D. F. Othmer[1]

UNIVERSITY OF MICHIGAN, ANN ARBOR, MICH.

An apparatus has been built for studying the effect of temperature, concentration of small amounts of air, and temperature drop on the rate of condensation of steam on an isothermal condensing surface.

Within the experimental range and errors, the following empirical equations define the coefficient as determined by these individual independent variables:

$$f = a(\Delta T)^b$$

$$\frac{f}{f'} = dC + e$$

$$f = Fg^T$$

where f is coefficient, ΔT is temperature drop, C is composition expressed as per cent air by volume, T is temperature in degrees Fahrenheit, and the other letters represent empirical constants. These individual equations have been combined with certain simplifying assumptions into a single equation:

$$\log f = \log \Delta T\ [1.213 - 0.00242T] + \left[\frac{\log \Delta T}{3.439} - 1\right] \times [\log(C + 0.585) - 1.551 - 0.009T]$$

Several theoretical reasons for the variations indicated by the equations have been pointed out in the light of the resistance concept.

The process of condensation of impure steam and that of gas absorption have been compared.

.....

IT HAS been realized for almost a century that the rate of heat transfer between fluids and solids is dependent almost entirely on the physical properties of the fluids which cause them to form relatively stagnant films at contact surfaces. However, experimental work has not always been planned so that the mechanism of heat transfer through one film could be investigated independently, and in studies of the condensation of vapors there has usually been included another physical operation, the heating of water. In these reports references have been made to the amount of air present, but nowhere has its effect been closely scrutinized.

Reynolds[1,*] in referring to air in condensing steam, wrote:

> A priori it seemed probable that it might retard condensation very much; for when pure steam comes up to a cold surface and is condensed, it leaves an empty space which is immediately filled with fresh steam; so that the passage of steam up to the cold surface is unobstructed. * * * If, however, the steam is mixed with air, then the steam will be condensed and the air be left between the fresh steam and the cold surface; so that after condensation has commenced that surface will be protected by a stratum of air, and fresh steam will have either to displace this or pass through it before it in turn can be condensed.

Later work[2 to 11] has not changed the conclusions of Reynolds and other early experimenters, and many reports are to be regarded more as efficiency tests on specific commercial apparatus than as sources of data of general interest. Numerous studies have been made, but they have not satisfactorily determined the effect of non-condensable gas, temperature, and temperature drop from steam to tube (or amount of heat flowing) on the rate of condensation of steam. However, the literature shows that the coefficient varies between 1500 and 3500 (B.t.u. per square foot per hour per ° F.), and it is the purpose of the present work to show the quantitative effect of these conditions on this variation.

Apparatus

BOILER—The ends of a 38-inch section of standard 12-inch iron pipe were closed by welding on steel disks fitted with valves, packing boxes, etc., as shown in Figure 1. The inner surface was nickel-plated after the ends were machined for the fittings.

VAPORIZATION SPACE AND CONDENSER—If water is passed through a tube surrounded by condensing steam, the water is heated and hence the temperature of the tube is not constant. In order to avoid lengthwise variation in tube temperature, water was boiled inside the tube at a lower pressure than that of the steam outside, and the vapor formed was suitably condensed and the condensate returned. (To prevent ambiguity the outer 12-inch shell will be hereinafter

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[1] Abstracted from a thesis submitted in partial fulfilment of the requirements for the degree of doctor of philosophy at the University of Michigan. Presented before the Division of Industrial and Engineering Chemistry at the 76th Meeting of the American Chemical Society, Swampscott, Mass., September 10 to 14, 1928.

[1] Present address, Eastman Kodak Company, Rochester, N. Y.

[*] Numbers in text refer to bibliography at end of article.

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Defendant's Exhibit No. 108

COPY

GENERAL SEAFOODS CORP'N

GLOUCESTER, MASS.

July 21st., 1931.

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MR. O. F. BENZ,
Du Pont Cellophane Co.,
New York, N.Y.

Dear Mr. Benz:

The following is the substance of a memorandum summarizing our recent experiments with different grades of Cellophane and with Nymphrap and Diafane. I am passing along the information for what it may or may not be worth.

Considerable experience indicates that regular M.T. Cellophane has 3 undesirable characteristics from our point of view - the paper is too brittle; the moistureproof coating separates too readily; and occasional sheets leak moisture-vapor thru a number of imperfections in either the entire sheet or in the moistureproof coating.

The coating on the new MAT Cellophane does not separate even when immersed in water for 72 hours, but the sheet is too brittle for our use.

Samples of MAT-MGT Cellophane have been received and tested. This product was less brittle than the MAT grade but the coating separated when wet, tho not quite so readily as was the case with MT paper.

Samples of the Sylvania Industrial Corp'n Nymphrap moisture-proof Cellophane had the same objectionable features - i.e. brittleness and separation of the moistureproof coating.

The average vapor loss of M.T. Cellophane is 5 grams per square meter per 24 hours, but in different lots this leakage varies tremendously - from .215 grams to 35 grams. The MAT grade was not tested for vapor leakage but the MAT-MGT showed a leakage of only .645 and .860 grams in the two tests made. The Sylvania product showed a vapor loss of 10.5 and 10.7 grams.

In certain fields we are finding it desirable to use the Riegel Company's Diaphane. This paper now is very pliable under all temperature conditions; there is no separation of the coating material; it heat seals perfectly, and any of the Cellophane adhesives seal it well. The moisture-vapor loss has varied from 30.4 grams to 6.6 grams over a large number of tests with an average loss of 14.5 grams. The manufacturers seem to be greatly improving the moisture-vaporproof qualities.

Sincerely yours,

(s) Clarence Birdseye

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Defendant's Exhibit No. 109

WHAT WAS CHOSEN AND WHY

PROBLEMS THAT WERE MET AND SOLVED IN THE DEVELOPMENT OF A LINE OF SATISFACTORY PACKAGES FOR FROSTED FOOD PRODUCTS

by Alfred B. Brackett

THE AUTHOR:

Following an extensive experience in tool making with the General Electric Company, also as chief designer of machinery for the United Machinery Corporation, Mr. Brackett, in 1929, became assistant to Clarence Birdseye in the development of frosted foods. His work in the latter connection was in the testing and development of new papers, boards, bags and similar materials used in packaging.

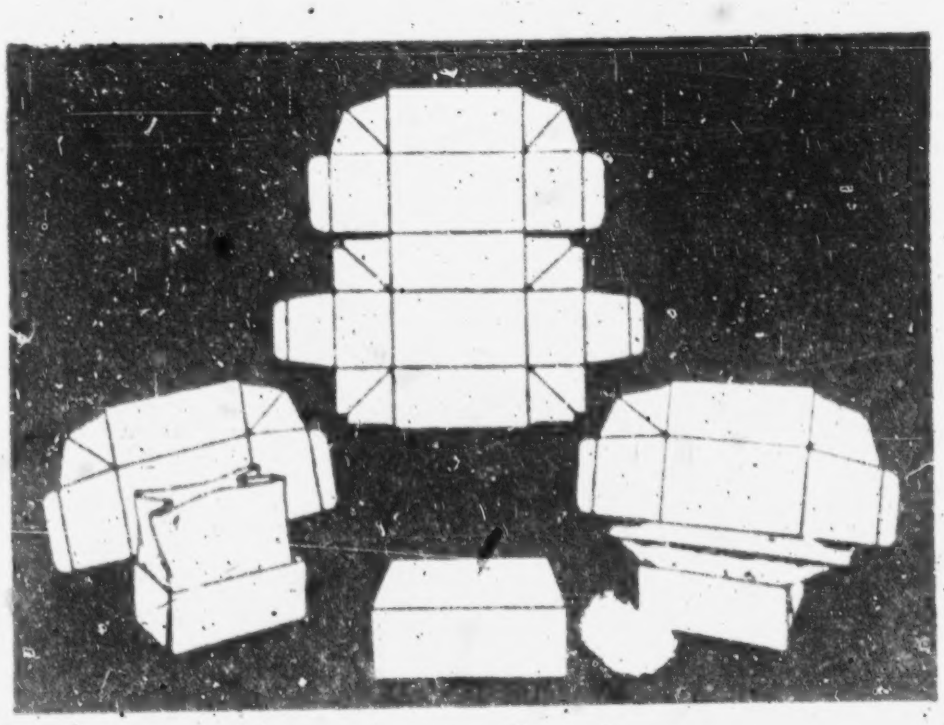
FEW laymen realize the many problems that confront the package engineer and I have been asked many times how it is possible for one to keep busy continually on package development work. Most of them seem to feel that it is necessary only to select from the many packaging materials those that best fit the product in question and that is the end of the problem. They do not appreciate that new materials are being developed from time to time which are a radical departure from existing materials, also that many products require special materials to keep them in the proper condition. It is true that certain products do not require special protective measures, and in such cases little work is necessary, but more often than not a considerable amount of research and development work is required before a satisfactory package is obtained.

To illustrate some of the problems involved, the following notes outline a development work that has been necessary during the past few years to provide satisfactory packages for a new line of goods—a group of food products, solid and liquid or semi-liquid—that required considerable protection from various elements to prevent detrimental changes.

The main reasons for packaging a product are to provide a unit or units that may fit the consumers requirements, be attractive for sales appeal, easily handled either manually or mechanically during production with a minimum loss; provide the necessary protection from the various elements, sanitary and readily opened and closed by the consumer. There were six major and many minor problems to be solved before all of these conditions could be successfully incorporated in the packages.

Unit sizes and shapes which would accommodate the various products that had dissimilar characteristics were first decided upon. The problems of the type of package and the material for same were partially solved when the size and shape was established, but the final selection of style and material was not made until after a considerable amount of research work was done. As usual, the design, trade mark and printed matter came in for discussion before a final decision could be made, and then these were changed several times. The shipping container problem was next, and finally other packaging materials such as liners, wrappers, etc., were adopted, only to be changed as fast as new and better ones were developed.

The specific gravity of the various products as well as the compactness with which they could be packed varied tremendously, and after many experiments a rectangular package of 30-cu. in. capacity was adopted as a standard unit. This was a one-pound unit for several of the largest used products in the line and the other products were packed into this package as well as size, shape and specific gravity would permit. Larger units, made in multiples of the small unit to facilitate storing and shipping container problems, were also adopted. In addition to the small and larger units, it was also necessary to create many special sizes for those products whose peculiar shapes and characteristics would not allow economical packing in the standard packages.



Brackett patented carton which eliminates liner and provides tight corners.

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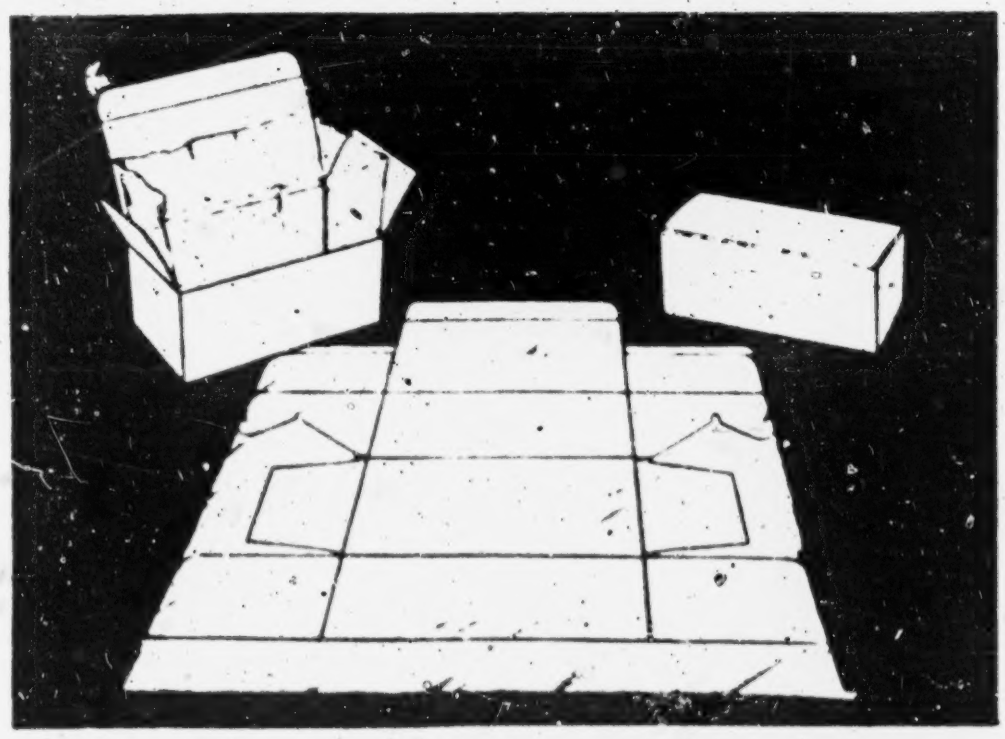
However, in every instance only rectangular packages were adopted.

The question of the proper type of package was the cause of much development work, and the results of this indicated that a hard substance, such as glass, metal, etc., would not be satisfactory because a certain amount of distortion was necessary in processing the products. The package that accommodated itself to this condition the best was a folding paperboard carton. Practically all of the standard types of folding cartons were experimented with, the so-called Peters type with a liner being found to give the most satisfactory results. Due to the wet surfaces of the products, a protective liner was found to be necessary, and few of the standard folding cartons other than the Peters type could be lined satisfactorily. This can be lined either manually or mechanically and various sizes of machines are available for this purpose.



Peters type of carton, with liner

When the products were placed in any of the cartons in direct contact with any of the regular grades of paperboard, either waxed or unwaxed, the moisture from the goods penetrated the board. This resulted in stained and unattractive cartons and deteriorated products so that liners of the most impervious material were necessary. In addition to the inside liner, it was found that an outside wrapper was essential as it provided additional protection to the goods, kept the cartons clean during the processing and made a more sanitary package. A low package cost as well as proper physical characteristics of the package were the deciding factors in settling this important question, and we found that the combined cost of carton, liner and wrapper was less than any of the solid containers, yet provided the necessary protection from the chemical changes. The folding type of carton had one outstanding feature over all of the solid or set-up types in that they can be shipped and stored in flat condition which means a considerable saving is possible in transportation and storage space and cost.

After deciding upon the folding carton, it was necessary to choose between the various paperboards for a base material; i.e., chip, news, kraft, manilla, solid sulphite, etc., for strength, appearance, odor and cleanliness in manufacture. A white patent coated manilla board .018 in. thick was finally chosen because it presented an attractive outside and a light colored inside, was made from new pulp and not refuse papers, had good bending qualities, possessed strength enough for the purpose and could be treated without discoloration of the white surface.

Dessication, oxidation and discoloration are three of the various changes in food products which are objectionable and very noticeable. To prevent these changes, it is necessary that the materials used in the package be as moisture-vapor proof as possible so that air cannot enter the package and moisture from the product cannot pass out of it.

None of the various grades of paperboard have this protective quality unless they are treated by some process. Board treated with silicate, varnishes, hot and color water wax processes were tested for water, grease and moisture-vapor proofness. Silicate was not especially useful at all. The varnishes and hot waxes were water- and grease-proof to a certain degree but not moisture-vapor proof, and the varnishes had an objectionable odor. The cold water waxed board with approximately .001 in. of wax on each surface gave the best protection of all the various processes which were tested, although this material was not nearly 100 per cent perfect. It appears to be completely water proof but colored liquids will penetrate the wax coating and stain the board if in contact with it for any appreciable length of time. However, it is useful for all practical purposes, and if the moisture is removed within a fairly short time no damage will be done to the board.

It was necessary to line the cartons with the most impervious material obtainable to overcome the weaknesses in the protectiveness of the cold waxed board. By using a material of this type, the penetration of the moisture to and through the board was overcome and air was kept from the product.

As in the case of the board, many materials for liners were tested with various results. Waxed glassine gave fair results but would gradually soften from the moisture on the product and become disintegrated. A 25-lb. vegetable parchment paper waxed to 30-32 lbs. was the first material which was used fairly satisfactorily. This sheet protected the product better than any other which was found available at that time but its opacity was a drawback as it was desirable to display the goods through the lining material. It was undesirable to remove the liner for display purposes as this allowed the detrimental changes to become effective in the product.

Transparent cellulose materials were quite new at this period and also comparatively costly. However, the next logical step was in this direction and various experiments were conducted with this type of material for considerable time before it was substituted for the parchment. These tests indi- (*Continued on page 75*)

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WHAT WAS CHOSEN AND WHY

(*Continued from page 70*) cated that the moisture-proof materials of this type were more moisture-vapor proof, therefore more protective than any others obtainable and that the rupturing strength was far greater. This sheet was also greaseproof but not entirely water-proof. It was found when moisture was in direct contact with it that the moisture-proof coating became softened and separated from the base material. This feature was objectionable but the other characteristics were so much better than in the other existing materials that it was finally adopted and used quite satisfactorily. Improvements were made from time to time in the transparent cellulose materials and finally the moisture-proof coating was applied so that moisture would not affect it. A new homogeneous acetate sheet was also produced which provided the necessary protection from the three elements specified. This combination of a cold waxed carton and moisture-proof liner provided a package that was almost ideal.

It was felt, however, that one more step should be taken to make the package perfect. Therefore an outside heat-sealed wax paper wrapper was incorporated. This paper was translucent enough so that the attractiveness of the package and the reading matter was not obscured. It was also the cause of considerable research work as the completed package was subjected to adverse conditions during the final processing, and it was found that the regular waxed wrapping paper would not stay sealed under these conditions. A new paper was finally produced which was similar in appearance to the regular grades of wax wrapping papers yet which was entirely satisfactory under all conditions. The wax on this new paper had had ingredients added to it so that it remained sealed at all temperatures and also provided a low moisture-vapor transmission rate. The final complete combination has been used for approximately two years and has proven to be entirely satisfactory.

Peculiar and objectionable odors in the various packaging materials were the cause of much experimental work and many of the standard materials would have been acceptable except for this feature.

The design and color problem was no different than for the average package. Several trade marks had been copyrighted and the choice of the most appropriate one was rather difficult. Many sketches were submitted before the final design was accepted and this was changed several times to further improve it. The printed matter is a problem which never seems to be entirely settled, and although much thought is put into it there is usually the necessity to change as new ideas are conceived.

No engineer is entirely satisfied with his creations, and this was no exception to the rule. Although I have previously stated that the complete package was satisfactory, there were features incorporated therein that were desirable to eliminate if possible. The use of liners is expensive, the application to the carton is

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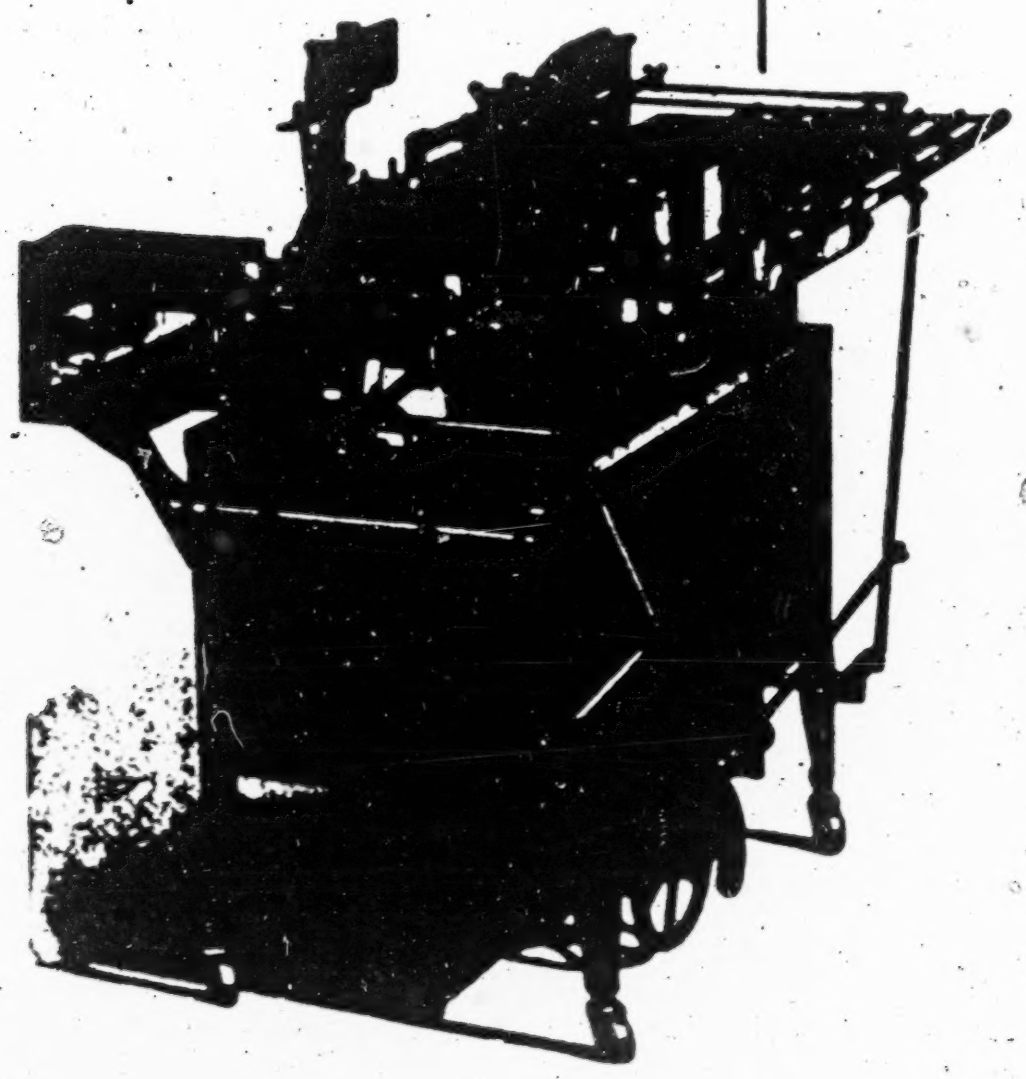

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troublesome and the troubles that exist in handling are objectionable. A great deal of thought was given to the development of a new type of carton and after many experiments, a different idea in a folding carton was designed which eliminated the liner and provided a carton that had tight corners. However, to use this type of carton for these products, it was necessary to develop a new board that would provide the required protection as those in existence would not do so. Previous to this development, some work had been done on new coating materials. This new carton provided the necessary incentive for further concentrated effort and many samples of coated boards were tested. The bulk of these coatings were of the nitro-cellulose and cellulose acetate variety but special waxes, varnishes and rubber coatings were submitted and tested. The most promising coating was the nitro-cellulose type applied to a sheet of glassine paper and this treated paper combined with the board. A board of this type had a moisture-vapor transmission rate of slightly less than the best transparent cellulose material and was also water and greaseproof.

Coatings of this type although useful are expensive, and a package of the above-mentioned construction using this variety of coated board would show no appreciable saving in the original cost although there would be less work involved in using it. For many products, especially dry ones, a carton of this type might be used advantageously at a nominal cost if made of a waxed or otherwise treated board. This is especially true in comparison with a two-piece carton.

The shipping container problem is generally the same in practically every case. The question of size, shape, material, etc., is decided by the shape and size of the package to be shipped, the type of product and the weight and conditions under which they are to be stored and handled. In many instances, a solid fibre case may be more suitable but the A and B flute corrugated materials have many applications and are probably used more extensively today than the solid fibre. This line of food products required the exclusion of heat during transportation; therefore a heavily insulated corrugated case of as nearly cubical shape as possible was used. In adopting the unit sizes, consideration had been given to the shipping container problem so that the various units might be packed into the same cases thereby keeping the number of cases to a minimum.

The question of providing a rectangular, leakproof package for liquid and semi-liquid products was one of the most interesting and, at the same time, most discouraging problems imaginable. A cylindrical container would not have been exceptionally hard to produce, but this package must follow the adopted standard for the solid products in shape and approximate size which made the problem exceedingly difficult to solve. Molded pulp containers were first tried but this process was practically in its infancy and containers of this type were roughly finished, porous and could not be closed tightly by practical methods.

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Many trick cartons were developed and tested but in every case there were several objectionable features in them, the most common of all was the inability to make a tight closure. Finally a combination package was developed which was composed of a transparent cellulose bag that was manufactured by a special process to provide a tightly sealed seam and bottle closure, a seal end carton made from a water resistant manilla board and a tight wrapper of a water resistant paper or of paper-backed aluminum foil.

It was somewhat of a problem to obtain tightly made bags of moisture-proof transparent cellulose as this material did not adhere especially well and the existing processes of bag making were such that leak-proof bags could not be manufactured on the then existing equipment. Square and satchel bottomed bags were the types that adapted themselves best to this problem but it was found to be impossible to make bags of this kind that would hold a liquid. A double-folded, bottom-sealed flat bag, however, was finally produced which was usable. Most adhesives for gluing this material had objectionable odors, and it was only after many adhesives were developed that a suitable one was obtained and only one company succeeded in making a comparatively tight flat bag.

Although relatively tight bags were obtained, many of them became leakers during the filling and closing operations. This necessitated a water resistant board for the carton. The flaps of a seal end carton must be securely glued to obtain a fairly tight carton, therefore, the type of board that could be used was limited to those having an affinity for glue. This eliminated the heavily waxed and other types of protectively coated boards. The board finally chosen was one having the maximum amount of wax emulsion incorporated in the pulp in the beater operation. Only approximately 8 per cent of wax could be safely added without softening the board too much and otherwise spoiling it. This amount did not make a waterproof board but did provide sufficient water resistance.

All those interested in packaging know that the bottom closure of a seal end carton can be made relatively tight on several existing machines but it is practically impossible to close the top flaps as tightly because only a limited amount of pressure may be applied. Some provision had to be devised to close the eight corners securely so that none of the product might leak from those not tightly closed. A tight wrapper of a water resistant material was the answer to this part of the problem and many packages of various liquid products were packed satisfactorily.

One other phase of this problem was troublesome. The most suitable glue for top and bottom sealing the carton and the application of the tight wrapper was a so-called water-proof glue. Castein and other similar adhesives would have been satisfactory but unfortunately there were odorous preservatives used in all of these glues which would contaminate the product. Several of the larger glue companies tried to develop a glue of this type without this objectionable feature and at last one was produced which was perfectly satisfactory in every respect.

A large amount of machinery is necessary to handle a package of this type mechanically and it is very slow and expensive to use them manually. However, it was used fairly satisfactorily for two years when a new and more simple type was created. This new one was built around the patented carton previously mentioned and included a bag made from a new impervious material.

The ideal tightly made bag for liquids is one made from a material that can be heat sealed instead of glued and having sealed portions which cannot be separated easily after sealing. A suitable material of this type was not made commercially nor was there machinery in existence for making bags by this method. However, this did not prevent us from going ahead along these lines, and after many costly experiments a heat-sealing nitro-cellulose sheet was produced and had a low vapor transmission rate which provided protection from the various detrimental elements. Some of the bag making companies developed a line of machinery for making heat sealed bags which were nearly 100 per cent leakproof. This type of material simplified the bag closure as it was only necessary to apply heating elements to the folded top portion to make a tight closure. Semi-liquid products are now being packed in this type of carton successfully and the board used is not the costly coated type but a regular cold waxed, white patent coated board.

There were many mechanical problems involved in this development but I will only mention one which was especially interesting. This was the attaching of a transparent cellulose liner to a cold waxed carton blank. Some difficulty was experienced in lining the cartons on the machine with the loose liners and it was thought desirable to attach the liners to the blanks to overcome this trouble. As practically every one knows, both of these materials do not adhere to each other especially well but various experiments were tried and at last by eliminating the wax from the inside surface of the blank it was possible to attach the liners to this surface on a transparent cellulose attaching machine. Thereafter, there was no slipping of the liners nor other trouble during the setting up and handling.

Frequent tests were made to determine the moisture-vapor transmission quality of the various materials. We were constantly confronted with the protective qualities of the various materials. The imperviousness of the materials to moisture-vapors was our first thought and the moisture-vapor transmission rate of practically every material which appeared to be useful was determined. Our method for obtaining these determinations was one similar to that described by Abrams and Chilson in the October 30, 1930, issue of the *Paper Trade Journal* with minor changes.

By our method, which was also used by several other laboratories, a crucible containing 10 cc. of distilled water is placed on a square of paper. A crystallizing dish is dipped into unbleached beeswax heated to the

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smoking point and placed over the crucible. The wax, on cooling, seals the paper to the dish which is then inverted thus causing the water contained therein to run out into the dish.

The paper is trimmed as close as possible to the dish and wax applied to the trimmed edge. The dish and paper is then weighed to 0.1 mg. and placed in an oven maintained at 70 deg. F. and 50 per cent relative humidity containing several flat dishes of dilute sulphuric acid and a small fan for circulation of the air within the oven. It is also well to insulate the dishes from the shelves by means of corrugated cardboard. After 24 hours the dishes are again weighed.

The dishes are approximately 3 in. or 7.5 cm. in diameter and have a depth of about 1.5 in. The area of paper tested is equal to the area of the top of the dish. The actual losses are multiplied by the figure obtained by dividing the area in square centimeters of the paper exposed into one square meter or 10,000 sq. cm. The results are stated as grams loss per square meter per 24 hours.

In order to obtain an approximate determination of the amount of moisture absorbed by the paper itself the following method was used: Several disks of the paper under test were cut by a die slightly smaller than the top of the crystallizing dish. The average weight of these disks was determined. At the end of the test, the paper is cut from the crystallizing dish by means of a sharp instrument, wiped free of moisture which may have condensed thereon and cut into disks with the die. The weight of this disk is determined and the average weight of a disk of the untested paper subtracted therefrom. The difference is the approximate weight of moisture absorbed by the disk of paper during the test. This should be calculated as grams of moisture absorbed per square meter.

The determinations obtained by this method were comparable to a certain degree but we found it difficult to obtain accurate check tests by this method. As the relative humidity varied from day to day, so would our results vary and there was apparently no constant which could be used to make these results more comparable. Our laboratory finally improved our method so that we were able to make determinations that could be checked whenever it was desirable to do so.

The following procedure was used in our new method: Place the material to be tested in the constant temperature 50 per cent relative humidity box for 48 hours prior to the test. Cement the material to the crystallizing dish according to the technique employed in the previous method. Determine the gross weight of the prepared dishes to 0.1 mg. and then place them in the oven as previously stated and weigh them at the end of each 24-hour period for seven days. During the first 24-hour and possibly the second 24-hour period, there may be a slight gain in weight but from then on there will be a steady loss in weight for the remainder of the period of the experiment. An accurate picture of the vapor transmission rate will be gained by determining the average daily loss of the gross weight from the dishes for a period beginning with the point at which they show a steady loss in weight. This eliminates the first period or so of the experiment during which time the material was coming to equilibrium in moisture contents. The following table will show the accuracy of this method.

A second run was made in triplicate with this same material and the average loss per dish per 24 hours was 0.0022 gr. as compared with 0.002 gr. in the above table. This shows the reliability of the technique employed by this method.

This material which was a light weight sheet had practically reached equilibrium at the start of the test but the last five periods only were used for the determination. However, when heavier sheets were tested, we found in many instances that gains in weight were recorded at the end of the 48-hour period which would indicate that it is desirable to leave the heavier materials in the constant temperature cabinet for an additional 24 hours before starting the experiment.

MATERIAL: MOISTURE-PROOF TRANSPARENT CELLULOSE

Start	Time in hours						
Weight dish plus water	24	48	72	96	120	144	168
A—70.844 gr.	70.841 gr.	70.839 gr.	70.837 gr.	70.835 gr.	70.833 gr.	70.831 gr.	70.830 gr.
Loss	−0.003	−0.002	−0.002	−0.002	−0.002	−0.002	−0.001
B—66.110	66.106	66.104	66.100	66.097	66.095	66.093	66.091
Loss	−0.004	−0.002	−0.004	−0.003	−0.002	−0.002	−0.002
C—72.064	72.061	72.060	72.058	72.057	72.055	72.053	72.053
Loss	−0.003	−0.001	−0.002	−0.001	−0.002	−0.002	−0.001
Av. loss	−0.0033	−0.0017	−0.0026	−0.002	−0.002	−0.002	−0.0013

Av. last 5 days 0.002 gr. loss per dish or 0.4 gr. loss per sq. m. per 24 hrs.

The phases of packaging outlined and explained in this article are comparable to those which exist in packaging many products, and suitable materials are obtained only by the most perfect cooperation of the manufacturers of the various materials with the engineers. The research personnel of the producing companies are always available to help in the development of special materials and processes and they deserve a great deal of praise for the services they render.

IN describing the "Wild Cargo" display used by the Eberhard Faber Pencil Company, on page 86 of the May, 1934, issue, it was stated that this display was designed and manufactured by the paper box division of the Warner Brothers Company. It is true that it was produced by the latter but the idea of the display was conceived by those directly connected with the Eberhard Faber Pencil Company.—EDITOR.

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Defendant's Exhibit No. 110

Moisture Vapor Proofness of Wrapping Materials Used on Frozen Foods*

By Clarence W. DuBois and Donald K. Tressler

In the United States there are now approximately 3000 cold storage plants *(1)* offering locker services to farm and other people wishing to preserve fruits, vegetables and meats for home consumption. The development of this and the entire frozen food industry has brought forth many problems. A problem that confronts many engaged in packing frozen foods is the selection of papers and other packaging materials that will protect the products from desiccation and contamination in storage *(2)*. This article will be devoted to a report of findings of the different types of papers and wrappings under study at this Station.

The air in most low-temperature storages usually has a low relative humidity due to the condensation of much of its moisture on the coils of the refrigerating system. Because of this low relative humidity frozen foods held in storage have a tendency to dry out, or desiccate, unless protected by some moisture-vapor proof wrapping or package. In the case of meat and poultry the protector used is usually some type of paper. Papers are also generally used for the lining or wrapping of many types of cartons *(3)*.

Purpose

The purpose of these tests, which were conducted on a considerable number of the papers offered on the market as packaging material for frozen products, was to ascertain the protective value of these papers to frozen foods in lockers and cartons. For various reasons it was impossible to test all of the papers on the market, but all of the samples submitted to this laboratory by paper manufacturers were tested.

It is important that a wrapping material must prevent desiccation of the enclosed food, protect the food from absorbing outside flavors and odors and protect the food from contamination. It is also important that the paper doesn't crack or become brittle at a low temperature, absorb blood, water, oil or grease, nor impart flavors to the product enclosed. In order to learn whether or not these papers could fulfill these above demands they were subjected to tests to determine: the loss of moisture vapor through the paper, their resistance to bloodstains, grease and oils, soaking up water, imparting flavors to products, brittleness and cracking at low temperatures, and actual storage conditions.

Methods for Determining Moisture Vapor Transmission

The methods involved in determining the moisture vapor transmission through the papers were those described by Tressler and Evers *(4)*.

Twenty c.c. of water was put in each of a number of crystallizing dishes (4 cm. in diameter) and the water was allowed to freeze. Then a piece of paper to be tested was sealed over the top of each dish using a special wax. Superfluous paper was then trimmed off.

The wax used in sealing the paper to the tops of the crystallizing dishes must possess the quality of not cracking when subjected to low temperatures. The weighings were made in a room held at 10 deg. F. If the sealed paper should crack loose from the dish at this low temperature, the seal would be broken and the test ruined. The wax used was prepared by melting together 22 per cent paraffin, 23 per cent beeswax and 55 per cent petroleum jelly (vaseline).

The covered dishes were then placed in a constant temperature, constant humidity chamber located in a 10 deg. F. room. The temperature was thermostatically controlled at 5 deg. F. with a relative humidity of 50 per cent controlled by a sulphuric acid solution. The papers were then allowed to remain 48 hours to come to equilibrium with the air before they were weighed and the weights recorded. The dishes were then returned to the chamber for seven days before the second weights were made and recorded. Each paper was run in triplicate. The difference between the first weights and second weights, the average loss per day per dish, the average loss per paper and the loss per square meter were then calculated.

Results

The figures in Table I are the results of the moisture vapor transmission through the various papers at 5 deg. F., at a 50 per cent relative humidity.

TABLE I.—MOISTURE VAPOR TRANSMISSION OF WRAPPING PAPERS AND LINERS AT +5 DEG. F.

Paper	Type	Average loss in grams per sq. meter per day
1	Paper waxed two sides	24.3
2	Paper waxed one side	31.7
3	Paper waxed one side	33.5
4	Paper waxed one side	36.4
5	Parchment, no coating	113.9
6	Parchment waxed one side	18.0
7	Parchment waxed two sides	28.0
8	Parchment with special coating	1.4
9	Semi transparent paper	2.0
10	Laminated semi transparent paper	.5
11	Special coated vegetable parchment	1.3
12	Special coated vegetable parchment	2.2
13	Special coated sulphite paper	2.3
14	Waxed paper two sides	26.0
15	Transparent viscose sheet (moisture proof)	.0
16	Transparent viscose sheet (moisture proof)	1.0
17	Transparent viscose sheet (moisture proof)	.5
18	Transparent viscose sheet (moisture proof)	.9
19	Transparent viscose sheet (moisture proof)	.6
20	Transparent viscose sheet (moisture proof)	1.3
21	Transparent viscose sheet (moisture proof)	.4
22	Transparent viscose sheet (moisture proof)	.6
23	Waterproofed heat sealing transparent paper	2.2
24	Special wax coated parchment	.9

* Water-proofness should not be confused with moisture-vapor-proofness since a paper may be water proof without being water vapor proof. A moisture vapor proof material is one that will prevent moisture from diffusing through it. Parchment papers usually are water proof but not water vapor proof. Waxed paper absorbs water and will tear very easily when water soaked.

* Approved by the Director of the New York State Agricultural Experiment Station for publication as Journal Paper No. 343, October 11, 1939.

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Methods for Miscellaneous Tests

In testing the papers for resistance to bloodstains a piece of paper approximately six inches square was taken on which was placed about a tablespoonful of fresh blood and allowed to stand for 20 minutes. This method was repeated with another piece of paper using water to ascertain resistance to water and the results noted.

To test for grease, oil, and flavor imparting resistance, a piece of paper six inches square was taken in which a piece of butter was wrapped and allowed to remain at room temperature for 12 hours. The papers were then opened, the butter tasted by three persons, and the paper examined for grease absorption.

The papers were placed in a 10 deg. F. room for one hour, then tested for brittleness by rubbing the paper between the hands.

Another piece of each paper was tested for resistance of the coating to cracking at 10 deg. F. by wrinkling the paper in the hands. The results were noted.

Results

Table II shows the results obtained in testing the various papers for resistance to blood and bloodstains, grease and oil, soaking up water, imparting flavors to products, brittleness and cracking at low temperatures.

TABLE II.—RESULTS OF MISCELLANEOUS TESTS

Paper	Heat Sealing quality	Stain-proof	Grease proof	Condition at zero	Water-proof	Brittle	Flavor Imparted
1	Fair	Stains	No	Wax cracks	No	No	None
10	Fair	Stains	No	Wax cracks	No	No	None
22	Fair	Stains	No	Wax cracks	No	No	None
3	Fair	Doesn't show	No	Wax cracks	No	No	None
25	Not heat sealing	Soaks up stains	Takes up grease	No	No	No	None
7	Fair	Stains	Not entirely	No	Not entirely	No	None
11	Fair	Stains	Yes	No	Not entirely	No	None
14	Good	Yes	Yes	No	Yes	No	None
1	Good	Yes	Yes	Cracks slightly, no harm	Yes	No	None
10	Excellent	Yes	Yes	Cracks very slightly	Yes	Quite brittle	None
22	Excellent	Yes	Yes	No	Yes	No	None
3	Excellent	Yes	Yes	No	Yes	No	None
25	Good	Yes	Yes	Slight cracking	Yes	No	None
7	Fair	Stains	No	Cracks badly	No	No	None
11	Not heat sealing	Yes	Yes	No	Yes	Very brittle	None
14	Excellent	Yes	Yes	No	Yes	Slightly brittle	None
17	Excellent	Yes	Yes	No	Yes	No	None
18	Excellent	Yes	Yes	No	Yes	No	Oily
19	Excellent	Yes	Yes	No	Yes	No	None
20	Excellent	Yes	Yes	No	Yes	Slightly	None
21	Excellent	Yes	Yes	No	Yes	No	None
22	Excellent	Yes	Yes	No	Yes	No	None
23	Good	Yes	Yes	Cracks	Yes	No	None
24	Good	Yes	Yes	No	Yes	No	None
25	Not heat sealing	Yes	Yes	No	Yes	No	None

Methods Followed in Storage Tests

Pork chops, lamb chops, veal cutlets, and cuts of beef roasts were wrapped in a paper, then a stockinette was pulled over the paper and meat. The stockinette serves as a protection to the package and bring the paper in closer contact with the product on all surfaces. The meats after being packaged in the various types of wrappers were placed on wire racks and frozen in an air blast in a room held at —10 deg. F. After the meat was frozen, it was weighed and then placed on open shelves at —5 deg. F. to —10 deg. F. The room had an approximate relative humidity of 40 per cent. The meats had been stored under these conditions for a period of six months when the second weights were taken. Table III shows the loss of moisture from the package with the appearance observations noted on examination.

TABLE III.—RESULTS OF PRACTICAL TESTS

Paper	Meat	Per cent weight loss of moisture	Appearance
1	Beef	2.1	Desiccated
10	Beef	0.19	OK
22	Beef	0.12	OK
3	Beef	2.5	Desiccated
25	Beef	0.1	OK
7	Beef	2.6	Desiccated
11	Beef	0.08	OK
14	Beef	4.6	Desiccated
1	Pork	1.4	Desiccated
10	Pork	0.18	OK
22	Pork	0.17	OK
3	Pork	1.8	Desiccated
25	Pork	0.05	OK
7	Pork	3.5	Desiccated
11	Pork	0.17	OK
14	Pork	5.0	Desiccated
1	Veal	3.0	Desiccated
10	Veal	0.12	OK
22	Veal	0.09	OK
3	Veal	2.7	Desiccated
25	Veal	0.08	OK
7	Veal	4.7	Desiccated
11	Veal	0.13	OK
14	Veal	6.0	Desiccated
1	Lamb	1.8	Desiccated
10	Lamb	0.17	OK
22	Lamb	0.18	OK
3	Lamb	2.0	Desiccated
25	Lamb	0.11	OK
7	Lamb	2.5	Desiccated
11	Lamb	0.17	OK
14	Lamb	3.0	Desiccated

Discussion

The temperature at which frozen meat is held has a decided effect on the length of time the meat can be kept without its becoming rancid. The higher the temperature the sooner the fat becomes rancid.

The storage temperature also affects the rate of loss of moisture from meats. The lower the temperature, other conditions being the same, the lower the rate of loss. The fat of meat wrapped in a material that has a low moisture vapor transmission rate does not become rancid as soon as that packaged in a material that has a high vapor transmission rate, probably because a film of moisture on the surface of the meat protects the fat from oxidation by the air.

Frozen meat wrapped in a paper that has a high moisture vapor transmission rate, if stored at a high temperature, e. g. +10 deg. F., is likely to take on off flavors, to absorb "storage" odors and to desiccate.

It is evident that the patrons and managers of locker plants should use discretion in selecting the wrapping materials employed in packaging frozen foods. The owners and operators of locker plants should aid their patrons to the utmost in securing and selecting wrapping materials that will satisfactorily protect frozen products from dessication and contamination while in storage.

Summary

The results of the 25 packaging material tests indicate a wide variation in their adaptation for packaging frozen foods.

If we assume that a paper or other wrapping material adequately protects meat and other foods from desiccation, if at +5 deg. F., it transmits not more than three grams of moisture vapor per square meter per 24 hours, and if in addition the material is not stained by blood or grease and does not become brittle at low temperature, nor impart a flavor to the food, then our results show that the following materials

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may be considered satisfactory for use in packaging foods for storage in lockers:

E. I. DuPont de Nemours & Co., Inc.
300 lbs. MAT Cellophane
300 lbs. Sp. MST Cellophane
450 lbs. Sp. MST Cellophane
Sylvania Industrial Corporation
300 lbs. STD. Sylphrap
300 lbs. BU Sylphrap
300 WP Sylphrap
Rexgal Paper Corporation
40 lbs. Heat sealing Vegetable Parchment
35 lbs. Heat sealing Ivory Durapak
Dialane
Laminated Dialane
Paterson Parchment Paper Company
Special Coated Parchment
The Menasha Products Company
Paraweld Parchment
Dewey & Almy Chemical Company
Cry-O-Vac latex

It is impossible to test all the wrapping materials on the market suggested as being adapted for use for packaging frozen products. All such materials submitted by manufacturers were tested prior to July 1, 1939. This work is being continued and materials are being tested for adaptability for frozen products as they are submitted.

Literature Cited

(1) Tressler, D. K. Freezing food on farms. Refrigerating Engineering (1939) In press.
(2) Tressler, D. K. Modern Packaging *11*, 0No. 4) 27-32, 66, 68 (1938).
(3) Tressler, D. K. and Evers, C. F. The Freezing Preservation of Fruits, Fruit Juices and Vegetables. Avi Publishing Company, New York (1936).
(4) Tressler, D. K. and Evers, C. F. Paper Trade J. *101*, (No. 10) 33-35 (1935).

International Nets $635,133

Richard J. Cullen in submitting the statement of consolidated profit and loss of International Paper and Power Company and subsidiary companies (excluding International Hydro-Electric System and its subsidiaries) for the third quarter and first nine months of 1939 together with comparative figures for the corresponding periods of 1938 says: "During the three months ended September 30, 1939 volume of business was at the highest level for any quarter since 1937. During September price increases were announced for many grades of paper (reversing the downward tendency prevailing during the summer) but these took effect too late to have much effort on earnings for the quarter. Net profit amounted to $635,133 compared with a net profit of $77,740 for the preceding quarter and a net profit of $12,850 for the third quarter of 1938."

The statement of profit and loss is presented herewith.

Finland Continues Trade As Usual

Business intercourse between the United States and Finland has been and still is being maintained as usual despite blockades, and the Finnish government's preoccupation at the moment with demands of the Soviet government, Holger R. Sumelius, managing director of the Finnish Paper Mill Assn., said last week.

Mr. Sumelius, now calling on business connections here, saw no reason to believe that serious interference with Finnish-American trade would occur in the future.

Mr. Sumelius became head of the Finnish paper mill group a year ago, succeeding H. J. Procope, who is now Finland's Minister to the United States.

"The Finnish people presented a very solid front on complete independence and absolute neutrality before I left home," said Mr. Sumelius, "and I have every confidence that new conditions have not changed that attitude."

About 85 per cent of Finland's industrial activity, according to the visitor, has to do with timber or timber products. The chief export item is newsprint paper. United States is the principal customer but some newsprint is sold to 40 or more nations.

The Finnish Paper Mills Association shipped out 70 cargoes of newsprint in September, he said, and maintained a similar level in October. The association, whose membership include all but one important producer of paper in Finland, is represented in the United States by Jay Madden & Co.

STATEMENT OF CONSOLIDATED PROFIT AND LOSS

	Three Months Ended Sept. 30, 1939	Three Months Ended Sept. 30, 1938	Nine Months Ended Sept. 30, 1939	Nine Months Ended Sept. 30, 1938
SALES AND OTHER INCOME:				
Gross sales, less returns, allowances and discounts	$29,133,736.48	$25,048,990.49	$81,241,869.47	$70,253,778.40
Other income—net	46,807.63	269,566.55	627,953.07	752,770.94
	$29,179,244.11	$25,318,557.04	$81,869,822.54	$71,006,549.34
COST AND EXPENSES				
Cost of sales:				
Pulpwood, labor, materials, etc.	$18,488,801.03	$16,096,703.36	$52,033,952.03	$44,878,036.25
Maintenance and repairs	1,625,732.97	1,437,508.45	4,539,053.95	4,224,691.04
Taxes (other than income taxes)	707,079.43	697,932.99	2,104,471.18	2,016,109.67
Outward freight and delivery expenses	1,796,923.10	1,262,340.83	10,584,432.78	8,738,972.92
Selling, general and administrative expenses	1,402,545.61	1,377,218.96	4,261,184.59	4,098,505.53
Provision for doubtful accounts	153,057.22	150,228.91	459,534.83	455,147.87
	24,174,139.36	22,931,933.50	73,982,629.36	64,411,463.28
	$1,005,604.75	$2,386,623.54	$7,887,193.18	$6,595,086.06
DEDUCTIONS:				
Interest on funded debt	$797,167.23	$903,214.78	$2,512,468.07	$2,696,192.52
Interest on other debt	1,458.38	6,089.32	2,266.13	14,511.65
Amortization of debt discount and expense	93,436.77	89,252.39	280,312.65	283,221.46
Depreciation	1,170,190.70	1,106,587.49	3,518,073.06	3,259,681.21
Depletion	288,613.65	168,069.84	581,601.14	589,785.91
Provision for income taxes	82,056.60	83,397.89	214,603.08	387,205.46
Dividends accrued but not being currently paid on preferred stocks of subsidiaries	17,348.00	17,241.75	52,566.00	53,753.25
	2,370,471.33	2,373,773.38	7,161,892.13	7,283,351.46
NET PROFIT OR *Loss*	$635,133.40	$12,850.16	$725,301.05	$688,265.40(*)

(*) Loss

In the books and the above consolidated financial statement foreign accounts are stated on the basis of $4.85 for the pound sterling and at parity of exchange for Canadian currency. It is the practice of the companies to reflect in current operations any differences between these rates and the current quotations at the time funds are actually transferred or forward commitment contracts are settled.

At September 30, 1939, the undeclared cumulative dividends on the outstanding Cumulative Convertible 5% Preferred Stock amounted to $11.25 per share or a total of $18,416,768.75.

The above statements are subject to final adjustment at December 31st (end of fiscal year).

M 5297

Defendant's Exhibit No. 111

'R-12315

DU PONT

Cello-hane

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman H. C. Broems Date 3/9/39 No. 129

Firm GORTON PEW FISHERIES CO. Bus. Fish Prop. Class 1-12

St. & No. 327 Main Street City Gloucester State Mass.

Controlled by: J.

Final Decision by (Titles) J. J. Carroll, Pres. Contacted on this call? No.

Buyer J. J. Broderick Contacted on this call? Yes

Others Contacted this call (Titles) Phil Carroll

Changes in Mailing List?

Type of Call—Productive X Comp.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Du Pont	1,000	
Sylvania	None this quarter	

Items wrapped in transparent sheeting:

Frozen fish, cod fish carton, private brands.

Other products on which Cellophane could be used: (Note new products in work)

Extension on above.

a. Specify sales tools used—below:	d. Agreement account? NO
b. Latest success story—below:	e. Did you secure order? NO
c. Service and general remarks—below:	

Consumer Ad - "Invisible Ingredients" - Trade Ad

Frozen products.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
1/27/39	3/13/39	3/13/39	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1. & 2. — None.

3. Frozen filets - Expansion of "Cellophane" to fish now in printed parchment. Re-figured cost since price reduction. Used Invisible Ingredients to develop consumer preference. Covered Impulse sales value and greater protection.

R) Is marketing two lines; one which is designated as "Cellophane" wrap line and those in parchment. Latter sold on price basis and do not want to add to costs.

Box Overwraps - Suggested overwrap 5# boxes of frozen filets for merchandising value, advertising, and additional protection. Indicated packers in Boston were commencing to do this.

R) No interest.

4. Concentration on frozen filets which are now in parchment. Play up new prices.

5. None.

MI 5044

Defendant's Exhibit No. 112

R-12515

DUPONT

Cellophane

TRADE REPORT

(Trade Analysis Copy)

E	S
SALES COR.	CONV. SECT.
FROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman H. C. Broems Date 11/6/39 No. 453

Firm Gorton Pew Fisheries Co. Bus. Fish Class 1c/12

St. & No. 327 Main Street City Gloucester State Mass.

Controlled by

Final Decision by (Titles) T. I. Grace, S.M. Contacted on this call? Yes

Buyer J. J. Broderick Contacted on this call? Yes

Others Contacted this call (Titles) Phil Carroll - Her. Sheehan, Mgr. Frozen Fillets.

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sources of Supply	Lbs. Cons. Dur. this Calendar Quarter	If using competitive material, state type and reasons
Du Pont	1,500	#300 MST 2nds, 2 sources to secure
Sylvania	350	constant supply of 2nds. Emergency shipment from competitor's N.Y. Warehouse.

Items wrapped in transparent sheeting: Vic Bolast Bill

Frozen fish, cod fish carton, private brands.

Other products on which Cellophane could be used: (Note new products in work)

Extension on above.

a. Specify sales tools used—below:	d. Agreement approved? no
b. Latest success story—below:	e. Did you secure order? Enroute.
c. Service and general remarks—below:	

Price reduction - capitalized on both standpoint of competition and development of new business.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
10/5/39	11/8/39	11/10/39-h	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1. & 2. -- None.

3. Frozen Fillets - Refigured costs under new price schedule. Cost on seconds which they use figures on 1/4¢ per package. They charge trade 1-1/4¢ per unit. In their entire variety of frozen fish they offer trade two packages, Cellophane and parchment. As mentioned above, secure premium for Cellophane package.

   On basis of new prices endeavored to point out benefits to them of reducing extra charge on Cellophane By reducing the differential between Cellophane and parchment, based on present price of Cellophane, more brokers will give preference to Cellophane package. Surveys and concensus of fish men themselves is that Cellophane is selling frozen fish. This being the case, the more of their production that goes into Cellophane, the greater the opportunity for extra volume

   R) Mighty pleased about reduction. Stated they would refigure entire cost of Cellophane package and will charge accordingly. This procedure will be to our advantage as will mean greater call for Cellophane.

4. Continue using price reduction as means of expansion.

5. None.

M. 5045

Defendant's Exhibit No. 113

cc: W. C. HUNTER

Wilmington, Delaware,
November 16th, 1945.

TO: R. J. CROWLEY,
New York

FROM: W. J. HARTE

Subject: BIRDS-EYE SNYDER DIVISION,
GENERAL FOODS CORPORATION, New York, N.Y.

COPY

The article appearing in the November 12th issue of "Food Field Reporter", wherein they quote Mr. C. R. Kolb, Merchandising Manager of this company, clearly indicates the need we have for intensive work to hold our position on their frozen food business.

FILE

Among other things, Mr. Kolb states, "extensive experiments with both fibre and metal containers and all-foil containers are now being conducted by Birds-Eye".

Mr. Kolb indicated the experiments have not progressed far enough to draw any conclusions as to the relative merits of the new packages.

It seems to me we have need for some activity on our part in the direction of new packages incorporating our product, along with the other competitive materials they are now testing. My suggestion is that you confer with Bill Hunter as to the directions this should take.

M 5298

WJH:CP

Defendant's Exhibit No. 114

REFRIGERATING ENGINEERING APPLICATION DATA 34-R

Protective Packaging of Frozen Foods

J. C. Woodroof and William Rabak

CONTENTS

Factors Influencing Moisture Permeability	1
Packaging and Wrapping Materials	2
Packaging Affects Quality Retention	4
Specialized Packages Are Essential	4

THE frozen food industry from its inception has been handicapped in procuring efficacious protective packages. The conditions surrounding the packaging of frozen foods are unique in that the products, handling, and storage are strict departures from the ordinary.

With the advent of freezing as a method of food preservation, the development of new protective packaging became necessary. The trend toward paperboard and other nonmetallic containers has been universal because these types of packages are distinctive and serve to differentiate frozen from heat processed foods. The latter cannot be successfully preserved in such containers. Heat processed foods require the use of hermetically sealable metal or glass containers and after processing are quite stable over a wide range of average temperatures. Conversely, frozen foods are dependent upon low temperature storage at all times to prevent spoilage. Thus by comparison frozen foods are perishable commodities and the use of nonmetallic containers has been deemed advisable by the industry to emphasize the difference in keeping qualities to the consumer.

The retention of quality in frozen foods is dependent, to a considerable degree, upon protection against (a) moisture losses, which result in loss in weight of the product; (b) exposure to air, which results in oxidation, rancidity, or change in color and flavor; (c) loss of volatile flavors; (d) enzymatic activity; and (e) loss of vitamins.

When fruits, vegetables, or meats are prepared for freezing the peel, shell, or skin, which offers natural protection, is often removed. Packaging is an attempt to replace or improve upon that which was destroyed during preparation for freezing. Many frozen foods of mediocre quality have been permitted to dry out, become rancid, or develop off flavors and colors due to improper packaging or wrapping. The salable life of meats, fruits, vegetables, eggs, poultry, fish, or prepared food can be greatly shortened or extended by the material and packaging.

The importance of water-vapor retention within the frozen food package cannot be overemphasized. The tendency toward the loss of moisture by frozen material is in accord with the natural law of equalization of humidities. The free air space that surrounds the frozen food within the package approaches 100 percent relative humidity because of the presence of ice. On the other hand the atmosphere in the low temperature storage space is usually far below saturation. This difference in vapor pressure between the inside and the outside of the package explains the migration of water vapor from within the nonhermetically sealed package to the atmosphere, resulting in the drying out of the product. This loss of water vapor is a continuous process, the rate and amount of transfer being largely dependent upon the relative resistance of the package to water vapor. Thus the protective efficiency of the package is one of the deciding factors in the storage life of frozen foods.

FACTORS INFLUENCING MOISTURE PERMEABILITY

The following are of chief importance among the factors that influence the permeability of materials and airtightness of packages at low temperature:

Nature and Type of Protective Material — The moisture resistance of many protective materials for packaging or wrapping is dependent upon water-vapor-resistant coatings; and others, such as foil or pliofilm, upon the nature of the material. The desirable coatings are those that protect the product against moisture, grease, and oxidation and

REFRIGERATING ENGINEERING APPLICATION DATA—Section 34-R
(Revision of November 1944 AD 34 written by William Rabak.)
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J. C. WOODROOF, who has revised this AD Sheet from the 1944 work of William Rabak, is food technologist at the Georgia Agricultural Experiment Station, Experiment, Ga. He is chairman of ASHVE Technical Committee A-7, which deals with food processing and dehydration by low temperature evaporation.

WILLIAM RABAK is connected with the United States Department of Agriculture Western Regional Research Laboratory, Albany, Calif.

Jan 1949

that do not become brittle or crack when exposed to low temperatures.

Length of Storage Period—During short storage periods the efficiency of the packaging or wrapping material is not critical because loss of moisture and flavor is in proportion to the length of storage. However, the efficiency of the packaging should be such as to prevent even a minimum change in weight, color, or flavor.

Humidity in Storage Space—As a rule low temperature storage rooms are low in relative humidity, which is conducive to rapid loss of water vapor from nonhermetically sealed packages. However, there is less loss from very low temperatures than from moderately high storage temperatures.

Velocity or Amount of Circulation of Air in the Storage Space—Loss of moisture and flavor as well as oxidation are accelerated by the movement of low-humidity air across the surface of frozen food packages.

Method and Type of Seal—The method of closing and sealing packages may be as important as the material used. Poor seals permit leaking before and after freezing and are points of greatest losses of water vapor and flavor during storage. All frozen products should be packaged so as to exclude all of the air possible and the seal should be as good as the material of the package.

PACKAGING AND WRAPPING MATERIALS

Frozen food packages may be classified into three general types: (1) Nonrigid, relatively impermeable; (2) rigid, relatively impermeable; and (3) rigid, impermeable. Type 1 includes bags, pouches, and overwraps of water-vapor- and water-resistant materials such as "waxed" (paraffined) papers, water-vapor- and water-resistant cellophanes, rubber latex, rubber derivatives, and laminated sheet materials. Type 2 consists of treated paperboard containers; and type 3 consists of tin, aluminum, or glass containers.

Waxed (paraffined) Papers — Wax (paraffin) coated papers may be divided into two general classifications; i.e., coated on both sides and coated on one side. While both types are supplied for the packaging of frozen foods, only the former possesses the essential qualifications to enable effective usage and supply the necessary efficiency for the adequate protection of frozen materials. The amount and kind of paraffin decide to a great extent the efficiency of the paper. Generally speaking a medium-weight paper waxed on both sides with from 10 to 12 lb of a suitable paraffin per ream (500 sheets, 24 in. x 36 in.) is the most satisfactory. Close-textured papers are more desirable than loose-textured ones. Coated papers of this type are amenable to heat sealing and may be employed as bags, bag liners, or overwraps; they supply fairly effective protection against moisture losses provided the sealing is carefully done.

The principal disadvantage of ordinary waxed paper is that it loses effectiveness when subjected to folding or rough handling, which cause fractures and ruptures in the paraffin coatings. This is especially significant at low temperatures because paraffin loses its flexibility under the conditions of freezing storage. Therefore it is important that frozen food material protected by waxed paper be carefully handled at all times. As a general rule waxed paper should be used only for the protection of "dry" frozen material unless specially plasticized paraffin coating is employed. Double bags or double overwraps of waxed paper markedly increase the degree of protection.

Moisture- and Water-Resistant Cellophanes — Plain uncoated cellophane is not heat-sealable or moisture-resistant. It is known in the trade as "PT" (plain transparent) cellophane. This type is not designed for the protective packaging of foods. Moisture- and water-resistant cellophanes owe their special properties to lacquer coatings which are applied to the surfaces. The lacquers usually serve a dual purpose: to produce a moisture- and water-resistant surface and to provide a thermoplastic film which acts as the heat-sealing medium.

Water-vapor-resistant cellophane is designed primarily to resist the passage of water vapor and hence is of value in protecting dry-frozen commodities. Wet packs, such as fruit in syrup, require the use of special water-resistant films. The latter cellophanes are known as the "anchor" type because the lacquer coating is firmly attached to the PT cellophane sheet through the medium of a special undercoating. While the coated cellophanes are heat-sealable to firm bonds, care should be taken not to impair the efficacy of the coating by sealing at excessively elevated temperatures. Thus the sealing operation is critical and if not properly controlled may partially impair the protective values of the films. The best sealing temperatures vary somewhat, depending upon the characteristics of the lacquer, but generally lie between 285 and 385 F.

In spite of the fact that cellophanes are obtainable in varying thicknesses or gages, the thickness does not materially affect water-vapor resistance, this factor being governed entirely by the type of protective lacquer coating. When properly sealed, most of the coated cellophanes supply a dependable protection because the flexibility of lacquer is not ordinarily seriously affected by low temperatures. However, the most satisfactory types of coated cellophanes for the protection of frozen foods are those which are especially designed for low temperature use.

Laminated Materials—The lamination of sheet materials by means of flexible adhesives creates a durable and efficient sheet which supplies greater protection than single-sheet materials. There are various types of laminated materials available, such as paper to paper, cellophane to paper, cellophane to cellophane, cellophane to aluminum foil to paper, etc. The types that are coated on both surfaces are satisfactory for heat-sealable overwrapping. Those that are coated on only one surface may be effectively utilized when fashioned into pouches by heat sealing. Because of the greater durabilities and puncture resistances of laminated materials, they are more dependable for the packaging and handling of irregularly shaped frozen foods such as meat or poultry. As in the case of the waxed papers and cellophanes, the performance of laminated materials is dependent to a great extent upon the efficiency of the seals.

Rubber and Rubber Derivatives—Some of the most economical as well as efficient frozen food packaging materials have been made of rubber latex and rubber hydrochloride. This is especially true of bags for fowl. These materials are elastic, flexible at all temperatures, can be heat sealed, can be used alone or laminated to papers or boards, and have a life of several years at 0 F. The material is transparent and can be used the same as cellophane for most purposes and is much more efficient as a protective coating.

Rubber materials, both as sheets and bags, will doubtless be more generally used in the future. In the meantime other, and possibly better sheets and bags are being developed from derivatives of polyethylene and vinyl.

Aluminum Foil—When carefully and properly used, 0.001 or 0.0015 gage plain aluminum foil has proved to be an extremely efficient wrapping material for chickens, turkeys, and other products of irregular shape. Application is by covering the object with a single sheet of foil and gently pressing tightly into the seams and depressions. It is possible to mold the product and get a skin-tight wrap on chickens, ground meat, and fish without the use of adhesive or tape.

Other applications of foil are in laminating it to paper of any desired weight or to paperboards of any thickness. Foil laminated to paper has a spring to it and requires the use of tape or adhesive to hold it in place. Two objections to foil are that when used plain it is easy to puncture and it is difficult to write on. Both objections are overcome when it is laminated with a good grade of paper, however the molding and skin-tight features are lost.

Coated Paperboard Containers — Experiments have shown that some paraffin-coated paperboards are quite resistant to the penetration of moisture or water. However, the efficiency of the paperboard carton is dependent upon its shape, construction, and coating. With the rectangular type of carton it is difficult to eliminate leaks at the corners unless the entire carton is dip-coated after it has been formed. Also, this style of carton is difficult to heat-seal tightly. The round or cylindrical type of paraffin-coated container is effective in preventing the passage of moisture or leakage of liquid, provided the entire unit including the lid is heavily wax-coated and is amenable to a tight seal.

Ordinarily, the rectangular cartons are most dependable when fitted with a bag liner that can be effectively heat-sealed. Some liners, such as those made of water-resistant cellophane, are used for wet or sirup packs. Heat-sealed overwraps of waxed paper or cellophane are also effective if the sealing is carefully done. Laminated materials are widely employed as bag liners for square-shaped paperboard cartons.

A preprinted, rigid, rectangular, cardboard container with crimped metal ends has been gaining in use during the last two years. It comes in sizes as small as 12 ounces and can be closed by a machine approaching the speed at which tin cans can be closed. The high speed at which these containers can be filled and closed, and their resistance to rough handling after freezing, mark them, or some modification of them, to play an important role in commercial packaging of frozen foods in the future.

Dip Coatings—Because the efficiency of any packaging material is to a great extent dependent upon the tightness of the seal, one is naturally led to conclude that the ideal wrap for frozen foods should consist of an uninterrupted film of protective thermoplastic material applied as a dip coating directly to the frozen product or to the package containing it. A film having the required chemical and physical characteristics correctly applied supplies a protection that approaches the efficiency of a hermetically sealed metal or glass container. The thermoplastic coating likewise must be nontoxic, chemically stable, odorless, water-insoluble, and suitably flexible at low temperatures.

Since many thermoplastic materials and mixtures are known to be resistant to water vapor and air, investigations have been conducted at the Western Regional Research Laboratory, U. S. Department of Agriculture, and elsewhere to ascertain the value of this method of packaging in the protection of frozen foods. The results indicate the practicality of the method.

The procedure is simple in that it involves only the coating of frozen food by dipping it in the molten thermoplastic mixture. Upon coming in contact with the cold surface of the commodity or the package surrounding it, the dip coating solidifies and forms a continuous protective film which completely envelops the product with a closely attached covering, thus minimizing the amount of confined air. The procedure eliminates the weaknesses of heat-sealed closures and supplies a barrier which protects against contact with air and prevents loss of water vapor from the product to the surrounding atmosphere. Frozen foods packaged in this manner retain quality and food value for long periods, if stored at reasonably constant and low temperatures, because the method reduces oxidation, loss of moisture, and freezer burn.

The most suitable and readily available types of dip coatings at the present time appear to be those with a plasticized microcrystalline paraffin base. Because of its simplicity and effectiveness, this method of protection may well prove a boon to both the commercial packer and the frozen food locker patron. It is especially advantageous in the protective packaging of frozen meat cuts or poultry because the coating automatically adapts itself to the shape of the frozen part. A coating having the proper physical characteristics is easily removed or peeled off as a cast piece after exposure of the dip-coated frozen commodity to room temperature for a sufficient time to develop a film of water between the coating and the frozen food. Removal of the coating may be facilitated by immersion of the dip-coated material in lukewarm water for a short time.

As a variation of this procedure, the material after freezing may be packed tightly in cartons or bags and then dipped in the thermoplastic coating. Experiments have shown that this method of handling is, in some ways, superior to direct dipping because the carton or bag allows for expansion and permits the use of less flexible coating materials. The methods of application are numerous and are limited only by the ingenuity of the operator.

Tin, Aluminum, and Glass Containers—From the standpoint of ease of filling and closing, sanitation, economy, rapidity of freezing, protection of the

product, and finally the ease of thawing and emptying, tin cans are the best frozen foods containers. Other factors in their favor are that they can be had in sizes from a few ounces to more than 50 pounds, and closures may be crimped, friction, or slip-over; also the empty cans have considerable reuse value. The two objections to the use of tin cans, especially for locker plants and in the home, are that they are round and do not occupy all of the cabinet space, and that they are likely to be handled like canned goods.

Aluminum containers have not been generally used for frozen foods, chiefly because of the cost and ease of denting. Otherwise they are as efficient as tin cans.

Recent work in Denmark with aluminum-plate containers showed that fish in oil may generally be packed in plain aluminum plate. Only tunafish has caused some trouble. Fish packed in tomato sauce should not be packed in plain aluminum. Lobster is rather difficult to pack in aluminum, but may be packed in lacquered cans. Fish-balls and shrimps may be packed in plain aluminum cans.

Aluminum cans may also be satisfactorily used for packing vegetables, fruits, and meats. However, if the meat contains salt, if the fruits are highly acid, of if the vegetables are light colored, such as cauliflower or waxed beans, the aluminum containers should be lacquered.

Glass containers are not well suited to commercial packaging of frozen foods due to the weight and ease of breaking. However, they are used in locker plants and in home freezers. A freezing jar recently made available has tapering sides permitting it to be filled and emptied easily and a screw cap that can be easily put on and removed, and it can be washed and reused indefinitely.

Fruits, vegetables, poultry, meats, and fish are better preserved in freezing storage if contact with air is prevented or reduced to a minimum. This end can be accomplished in a practical, commercial fashion by using metal containers of sizes and construction suitable to the commodities to be frozen.

PACKAGING AFFECTS QUALITY RETENTION

The aim of freezing preservation is to retain inherent quality of a food product by maintaining the processed product at a constant low temperature to inhibit deteriorative changes in the tissues. These changes may consist of chemical impairment resulting in loss of color, development of off flavors, and destruction of vitamins, or they may be the result of physical changes due to loss of moisture from the product to the surrounding atmosphere. The latter phenomenon is generally known as freezer burn. The areas of frozen foods thus affected are sometimes changed to such a degree that the foods cannot be properly reconstituted by cooking and hence become unpalatable. Freezer burn can be obviated by effective packaging.

The extent of weight loss of frozen products in storage is governed by the relative water-vapor resistance of the lining or wrapping materials and the sealing thereof. Effective water-vapor-resistant wrapping or lining materials will prevent excessive loss of weight and the concomitant reduction of general quality. Excessive weight losses (5 percent or more) from frozen products are accompanied by serious impairment of the color, flavor, and other physical characteristics.

Experiments have shown that peas packed in paperboard packages with heat-sealed bag liners or over-wraps and stored at 15 F for 20 months lost approximately twice as much weight as those stored at 0 F for the same length of time under reasonably constant conditions of humidity. There is as yet no perfect package for frozen foods, and the best available kind must be supplemented with other good handling and storage practices in order to best preserve the products.

Observations over long periods of time have shown that both dry- and syrup-packed fruits, when ineffectively packaged, are subject to deteriorative processes because of dehydration and/or oxidation during storage. Studies by the U. S. Dept. of Agriculture showed that strawberries packed in nonairtight containers lost considerable vitamin C when packed dry or in syrup. Hermetically sealed containers (lacquered tin cans) were far superior to nonairtight containers (paraffined paper cups) for the preservation of vitamin C in frozen berries; a vacuum seal was advantageous in the preservation of vitamin C over prolonged storage periods.

SPECIALIZED PACKAGES ARE ESSENTIAL

The requirements for adequate protection of packaged frozen foods are now widely recognized by the industry. This recognition of requirements should result in rapid development of specialized containers for frozen foods. The establishment of packaging specifications also is a necessary step.

Much developmental work remains to be done on packaging materials and on methods especially suited to low temperature packaging conditions. The water-vapor-resistant materials or packages must measure up to exacting specifications. For example, they must be nontoxic, chemically stable, odorless, flexible at low temperatures, and of a nature to permit effective heat sealing.

The extent of the protection afforded to frozen foods by packages or packaging materials, when such products are stored at low temperatures, must be specifically evaluated. It will not suffice to assume protection on the basis of tests made at room temperature. Since some materials become brittle and lose their efficiency at low temperatures, the value of packages and packaging materials for protecting foods at temperatures above freezing must be regarded as tentative for frozen foods until they have been evaluated by actual low temperature tests.

Defendant's Exhibit No. 115

EXTRACTS FROM PROMOTION SECTION
SURVEY "FROZEN FOOD SALES TEST
AND CONSUMER SURVEY".

NOVEMBER 1946

FROZEN FOODS SALES TEST

AND CONSUMER SURVEY

NOVEMBER 1946

CELLOPHANE DIVISION
E. I. duPont deNemours & Company
Promotion Section
Wilmington, Delaware

M 5301

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OBJECTIVES OF SALES TEST & CONSUMER SURVEY

1. To determine consumer preference regarding frozen food packages.
2. To ascertain reasons for this preference.
3. To check the performance of the window carton and Cellophane bag after purchase by the shopper.
4. To obtain consumer suggestions for package improvement.

M 5301

PART I

SALES TEST

LOCATION - Philadelphia - Penn Fruit Company at 19th & Market Streets.

PRODUCT - Frozen peas - Green Valley Brand. A wax overwrapped carton was the only package used on this brand in the store prior to test.

PACKAGES - Four types of package were used.

1. A closed carton with a wax paper overwrap. (See photograph I.)
2. A closed carton with a Cellophane overwrap. (See photograph II.)
3. A window carton which consisted of a tray with die-cut window with a Cellophane bag inserted. (See photograph III.)
4. A double-wall Cellophane bag. (See photograph IV.)

SURVEY GROUP- Commuters from all parts of Philadelphia and housewives from a nearby higher class residential area. This gave good cross-section of age and income groups.

M 5301.

EQUIPMENT - Three section, well-type Weber frozen food case without top. Two sections used.

TIME - Four weeks beginning October 28 and ending November 23, 1946.

CONDITIONS - Since traffic flows in one direction and many shoppers are likely to choose first package they see, rotation of position each week was used as means of equalizing any influence of position.

1st week:

Carton with wax paper overwrap, Cellophane bag, carton with Cellophane overwrap, window carton.

2nd week:

Cellophane bag, carton with wax paper overwrap, window carton, carton with Cellophane overwrap.

3rd week:

Carton with Cellophane overwrap, window carton, Cellophane bag, carton with wax paper overwrap.

4th week:

Window carton, carton with Cellophane overwrap, carton with wax paper overwrap, Cellophane bag.

Stacks of packages were maintained constantly at equal height.

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PART II

RESULTS OF SALES TEST AND ANALYSIS

Sales for the four-week test period totaled 1860 packages of frozen peas or 465 packages per week average.* For the sales by week, see the following chart:

	First Week %	Second Week %	Third Week %	Fourth Week %	Total Per Cent	Total No. of Packages Sold
Carton with wax overwrap	27	37	23	22	27	504
Carton with Cellophane overwrap	28	25	28	29	28	516
Window carton	22	28	30	26	26	491
Cellophane bag	23	10	19	23	19	349
Total number of packages sold	560	437	464	399	100	1,860

*This was a "substantial" increase, according to Penn Fruit Co.

ANALYSIS - It must be remembered that prior to the test, the only frozen peas sold were in a wax wrapped carton. By the end of one month of free selection of the four packages tested, the wax wrapped carton accounted for 27%, while the units in Cellophane enjoyed 73% of total sales. The visible packages together amounted to 45% of total sales.

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SUMMARY

The test and survey indicate:

1. Most women prefer a rigid package for frozen foods. This may be due to the fact this is what they are accustomed to buying.

2. The window carton and carton with Cellophane overwrap are as acceptable to housewives as the carton with wax paper overwrap that they are accustomed to buying.

3. 45% of the women interviewed bought frozen peas without having planned to do so. This is another example of the importance of impulse buying in sale of frozen foods.

4. 75% of the women who bought peas on impulse said that they bought them because they looked good. This is a tribute to the transparent unit and shows again the importance of visibility in selling a product.

5. Reasons most often given for choosing the two closed cartons were: "They are stronger - would protect the peas better" and "This is what I'm used to buying".

6. Reasons given most often for choosing the window carton and Cellophane bag were: "It lets you see what you're getting" and "It is attractive looking".

7. Only 13% of the housewives interviewed would like a package different from the one they chose for peas for some other frozen foods. These women stated that they would sometimes like a carton if they were to store frozen food for a long time, or that they would sometimes like to see the product if they were buying asparagus, broccoli or other bulky vegetables.

8. Only 55% said that the labels used for the test packages were adequate.

9. 36% of the women interviewed wanted directions for cooking, and 22% wanted number of servings added to the label.

10. Of the women we contacted after they had used the peas packaged in the window cartons and Cellophane bags, only 7% had any complaint to make about the packages.

M 5301

CONCLUSIONS

A. Many women prefer a rigid package for functional reasons.

B. An important percentage (nearly half) would prefer more information on the package.

C. Women like to see what they are buying. A substantial proportion prefers a visible package.

D. Almost half of the purchases made in this test were on IMPULSE.

M 5301

Defendant's Exhibit No. 176

What Are The Better Wraps? What Do They Cost?

Reprinted From

LOCKER · MANAGEMENT

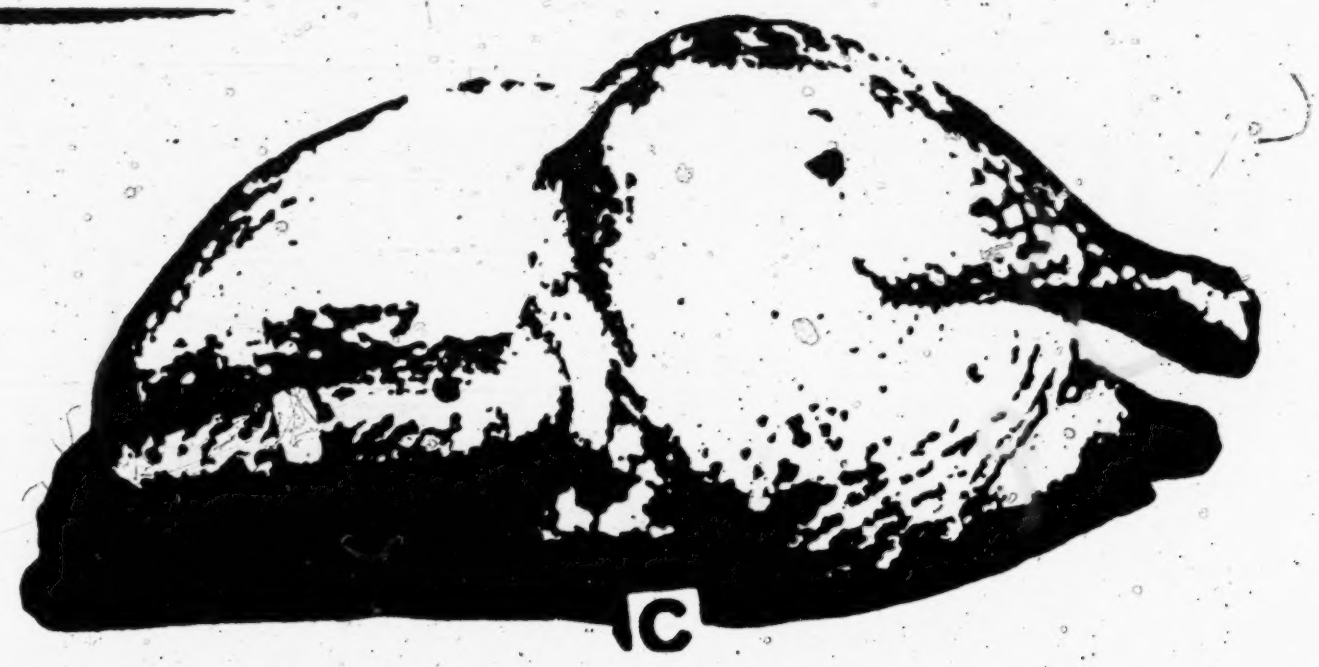
"The Magazine of Ideas for Locker Men"

SEPTEMBER, 1948

IM 5302

Why locker plants lose customers. This is an actual example of a poor wrapping job. Note the severe burn on this poultry which was stored for 11 months at zero temperature in a double wrap of standard waxed locker paper. The flavor when cooked was poor.

This kind of wrapping wins friends and holds customers! This bird has a bright appearance and no sign of freezer burn. It was protected by one of the better wraps and held for 11 months at zero degrees. The wrapping was plain aluminum foil. The quality when cooked was very good with natural flavor and juiciness well retained.



What Are The Better

Noted Packaging Expert Answers Your Questions

DEVELOPMENT of rancidity is the most common cause of undesirable flavors which may develop in frozen meat, poultry, and fish. The first manifestation of the early stages of rancidity in beef fat is a characteristic tallowiness. The most common cause for the development of rancidity in meats is exposure of the natural fats and oils to atmospheric oxygen. It is probable that other components of the atmosphere have no appreciable influence on rancidity development

portant factor because the interaction of oxygen with the fatty tissues is believed to be the chief cause of unpleasant flavors due to rancidity. A good wrapping material should be pliable enough to make a tight wrap, because air pockets on the inside of a package are undesirable.

In addition, a good wrapping material should be odorless, especially when damp; possess high wet strength so that meat juices will

conclusive. When a package is properly wrapped, the major loss of moisture is through the packaging material itself rather than through the folds. The same is true with respect to movement of oxygen into the package.

A single wrap of one of the best materials will give better protection than a double wrap of an ordinary waxed locker paper, and will require less labor and less material. It costs little if any more, per 100 pounds of meat wrapped, to use the best materials. The additional wrapping cost seldom exceeds 50c per 100 pounds of meat. Tests of packaged foods held at zero indicate that the following should be included in the list of best materials:

Plain aluminum foil
Laminated aluminum foil
Moisture-proof cellophane
Laminated glassine
Laminated cellophane
Pliofilm
Polyethylene

ALUMINUM FOIL — Numerous tests indicate that aluminum foil is among the best of the materials listed above. It may be purchased as plain foil or as a wrapping with foil on one side and paper, glassine, or other material on the other side. The latter type is known as laminated foil and is used with the foil side placed next to the meat. Both types are excellent. Plain foil lighter than .001 gauge is not desirable because of pin-holing and poor stripping quality; the best thickness to buy is .0015 gauge, when the width of the sheet is less than 24 inches.

CELLOPHANE—There are many types of moisture-proof cellophane but only very few types are recommended for wrapping moist foods such as meat. Dupont cellophane MSAT 83 or 87, or Sylvania cellophane PMFBS-3, should be used for this purpose. Unfortunately, the wrong types of cellophane frequently are sold. Such types may be labelled "made for frozen foods" but may be intended for wrapping dry products, not moist meat. Cellophane may be obtained in laminated form, thus providing a stronger sheet. The cellophane side should be next to the meat. Cellophane requires an outer wrap of stockinette or paper to protect it from breakage at low temperatures.

PLIOFILM—This is a transparent, rubber-derivative film, more flexible than cellophane at low temperatures. If handled much, an outer-wrap is desirable. The proper type of Pliofilm is FF 140. In bag form, it may be shrunk to become form-fitting by immersing the filled bag in near-boiling water. This procedure forces out the air. The bag opening then is closed by twisting, and the final typing may be done after removal from the water.

POLYETHYLENE — A transparent, plastic film that will stand more handling at low temperatures than cellophane or pliofilm. Gauge .0015 or .002 is recommended. Also available in laminated form.

WAXED LOCKER PAPERS—Tests of foods stored at zero indicate that present types of waxed papers provide only a moderate degree of protection from rancidity development. Some are better than others, but none compares in effectiveness with the best packaging materials. When a waxed locker paper is used, a double wrap is rec-

Wraps? What Do They Cost?

Estimated Cost of Wrapping Meat in Different Wrapping Materials

(Not including labor charges or cost of tape. Foil requires no tape.)

Wrapping Material	Single or Double Wrap	Sq. Ft. 100 lbs. meat	Approximate cost of materials to locker operators: Approx. cost per lb.	Sq. Ft. per lb.	Cost per 100 sq. ft.	Cost to wrap 100 lbs. of meat
Laminated cellophane (Brand A, rolls 500 ft. length)...	Single*	80	—	—	$1.19	$0.95
Laminated cellophane (Brand B, sold by the pound)...	Single*	80	0.48	50	0.96	0.77
Laminated glassine, 10 to 24 rolls (each 1,000 ft. length)	Single*	80	—	—	0.75	0.60
Laminated glassine, 25 to 49 rolls (each 1,000 ft. length)	Single*	80	—	—	0.72	0.58
Aluminum foil (.0015 gauge) 100 lb. lots.....	Single*	70	0.47½	47	1.01	0.66
Aluminum foil (.0015 gauge) 500 lb. lots.....	Single*	70	0.44	47	0.94	0.61

ommended with the waxed side next to the meat.

By using a good wrapping material meats, poultry, and fish should retain their natural fresh flavor for considerable periods of time. Of course, pork will not keep as long as beef and fatty fish will not keep as long as lean fish. Pork should be frozen just as soon as the internal temperature at the ham bone is down to 38° F. Every day of delay will greatly decrease storage life.

One of the difficult things for many customers, and even some locker men, to understand is that while delay of a day or two will make little if any noticeable difference in quality while the product is fresh, it makes a big difference in the storage life at zero. This is true of many products including pork, fish, and shellfish.

Too long an aging period is a common cause of beef acquiring an unpleasant taste after a few months at zero. About seven days in a chill room at 34° to 36° F., is considered good practice for good grades of beef with 10 days the maximum, and four to five days for the poorer grades. Maximum tenderness will be developed at these aging periods after the meat has been in zero storage for a few weeks.

After beef has been chilled to 38° F. it may be aged at a slightly higher temperature (40° to 42° F.) if the room is equipped with the proper type of ultra-violet lamps.

Not only is good packaging essential, but it is obvious that one must start with a product of good quality to obtain satisfactory quality in the frozen product. Almost every locker man knows that vegetables should be handled without delay from garden to freezer, and that they should be kept as cool as possible at all times. This applies especially to asparagus, snap beans, Lima beans, sweet corn, and peas.

Fewer people realize that placing warm vegetables in a cold room or refrigerator, or standing them in cold water does not necessarily accomplish quick cooling. The amount of surface exposed, and the air or water temperature and velocity will be the determining factors in heat removal.

The rapid removal of heat is of the utmost importance in the handling of meat after slaughtering. Failure to chill a beef carcass within about 24 hours to 38°F. at the thickest part of the round can result in souring at the hip bone. Failure to chill the hog carcass promptly to the same temperature at the ham bone is responsible for more ham losses in curing than any other single cause.

The principle so many people overlook in the cooling of vegetables, fruits, and meat is that the rate at which the heat can escape from the product is the important factor. This may apply to a tightly packed crate of spinach picked warm in the field where loose packing would permit faster cooling; or to packages placed too close together in the freezer so that heat cannot readily escape even though the temperature is low.

M 5302

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER: A. D. ATTERBURY COMPANY

SALESMAN: D.K.Shoop

DATE LAST REPORT: 11/4/47

ST. AND NO.: 65; Cooper,

DATE: 1/26/48

CONTROLLED BY

PURCHASING AUTHORITY

CITY-ZONE-STATE: YUba City, Calif.

CLASS: 1-4

INDUSTRY: Frozen Food

Walter letter

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT. M. CA. ETC.	1ST QTR. PUR.	2ND QTR PUR	3RD QTR PUR	4TH QTR. PUR.
DU PONT								
Bob.	0							
Shell.	0							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M L CHGE
A. D. Atterbury	Pres.		M	
J. Armour	P.A.	X	S	

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
FROZEN FOOD	1 M	300 MSAT 87	C	15 M
TOTAL	1 M			1 M

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

RETURN TO "CELLOPHANE" TRADE ANALYSIS

1. (a) Fruits, #300 MSAT-87 consumer bag-in-box.
   (b) Vegetables, Waldorf Cellophane lined carton.

2. (a) Will use up carryover of end-opening bags, then shift to Marathon wax bags, which subject contend save them a sizable amount of money by being easier to load with syrup products.

3. Subject's printed Reynolds foil overwraps cost $9.15 per M.

Will use foil only on cartons this year.

Unless lack of rain causes poor crops expect to freeze about 3 MM lbs. of produce in 1948 season.

M 5303

4417

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Defendant's Exhibit No. 117

DUPONT

☐ FIRST CALL

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

Re f Salad ~~Mfr. Stock~~ ~~Stock~~ ~~Crowley~~ ~~Watkins~~

CUSTOMER	SALESMAN	DATE LAST REPORT
Snow Crop Marketers	R. N. Henry	12/17/47
ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
445 Park Avenue	1/21/48	Clinton Industries, Clinton, Iowa, Legal
CITY - ZONE - STATE	CLASS	INDUSTRY
New York 22, N. Y.	1-12	Frozen Foods

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THRU	PT. MT. CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	0						
Milprint	90-M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
J. Moone	Pres.	X	M.	
M. B. Barclay	V.P.	X	M&S	X

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM CODE	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
Frozen Vegetables	150-M	MST	C	225-M
" Fruits	0	"	C	75-M
TOTAL	150-M			300-M

R-12727—REV 2-47

1. Progress.

2. Barclay advised everything is lining up and looks good. Placed additional order for 45-M lbs. film with Milprint - bringing orders to date to 90-M#.

3. Following recent contacts with packers, he is still worried, production-wise, about Cellophane. Says packers, who have had little or no experience with Cellophane reported they had heard Cellophane was 40% slower than wax, and that Pictsweet and Libby are about to threw it out. Advised him I was sure the former was untrue, and doubted the latter. Seemed reassured but is anxious that these packers be contacted All will start out on peas this Spring. Would like to have them contacted before then if possible. Advised to contact President or G.M. of each, saying contact is at Barclay's request:

R. D. Bodle Co., 71 Spring Street, Seattle, Wash.
Washington Packers Coop., Sumner, Wash.
Pendleton Canning & Freezing, Div. of
Utah Canning Co. (Ogden, Utah), Pendleton, Oregon
Smith Canning Co., Pendleton, Oregon and Lewiston, Ia.

- - - - - - - - - - - - - - - -

States this Spring will try out printed Cellophane and a high gloss paper by Western Wax, for comparison on appearance and production. Next season will probably adopt one or the other. He personally is sold

H 5140

4418

263

Defendant's Exhibit No. 118

on Cellophane.

They are also involved with packing of poultry by Chester Franz Co., St. Louis, Mo. and Mammoth Springs, Arkansas. Latter location has been using Waldorf cartons -- want to use a carton by Marathon and use their own Cellophane inner wrap.

Would like us to do anything we can for them.

5b) W. C. Lock -- please note above. Also Barclay would appreciate it if you could meet his West Coast production manager in San Francisco and go over the Cellophane angle with him --

R. M. Norcross, 92 No. White Road, San Jose, Calif.
TELEPHONE: Mayfair 2543.

M. H. Wheat -- please note item on Mammoth Springs, Ark.

General sales
please handle

5127

REPORT OF CALL

1. Objective (reason for making call).
21-1

2. Specific results of No. 1.

3. Other information, such as:

Assistance given and/or economy suggestions.

Objective or objectives developed during call.

Account knowledge—such as facts, re machine data, personnel, products, production, markets, merchandising methods, etc

New items (include type film and kind of package).

Future plans new policies new products, etc.

Competitive information.

Complaints.

Success stories.

Sales status—(explain reason for any important change in customer's purchases).

4. Mailing list changes—customer's old name or address.

5. Action needed by (a) District Office.
(b) Home Office.

What Are The Better

Noted Packaging Expert Answers Your Questions

By

Prof. James D. Winter

Frozen Food Laboratory

University of Minnesota

DEVELOPMENT of rancidity is the most common cause of undesirable flavors which may develop in frozen meat, poultry, and fish. The first manifestation of the early stages of rancidity in beef fat is a characteristic tallowiness. The most common cause for the development of rancidity in meats is exposure of the natural fats and oils to atmospheric oxygen. It is probable that other components of the atmosphere have no appreciable influence on rancidity development.

"Freezer burn" which is a surface discoloration apparently caused by loss of moisture may or may not be associated with rancidity. Freezer burn appears as light gray spots or areas on the surface of the meat. On poultry, it appears as light colored circular spots around feather follicles or as larger discolored areas on the skin surface.

It is obvious that a good wrapping material is one that will exclude oxygen and will protect the product from loss of moisture. Exclusion of oxygen is the more important factor because the interaction of oxygen with the fatty tissues is believed to be the chief cause of unpleasant flavors due to rancidity. A good wrapping material should be pliable enough to make a tight wrap, because air pockets on the inside of a package are undesirable.

In addition, a good wrapping material should be odorless, especially when damp; possess high wet strength so that meat juices will not cause it to soften and break; be greaseproof; have good "stripping" quality so that it will not adhere to the meat; be strong enough to resist tearing or puncturing in wrapping and handling; be easy to mark for identification and date of packing; and not become brittle or crack at low temperatures.

It has been demonstrated by many experiments in our laboratory that the better the wrapping material the longer will meat, poultry, and fish retain their original flavor when stored at zero. The evidence in this respect is

M 5302

Polyethylene

ALUMINUM FOIL — Numerous tests indicate that aluminum foil is among the best of the materials

phane may be obtained in laminated form. thus providing a stronger sheet. The cellophane side should be next to the meat. Cellophane requires an outer wrap of stock-

development. Some are better than others, but none compares in effectiveness with the best packaging materials. When a waxed locker paper is used, a double wrap is rec-

Wraps? What Do They Cost?

Estimated Cost of Wrapping Meat in Different Wrapping Materials

(Not including labor charges or cost of tape. Foil requires no tape.)

Wrapping Material	Single or Double Wrap	Sq. Ft. 100 lbs. meat	Approx. cost per lb.	Sq. Ft. per lb.	Cost per 100 sq. ft.	Cost to wrap 100 lbs. of meat
		Approximate cost of materials to locker operators				
Laminated cellophane (Brand A, rolls 500 ft. length)	Single*	80	—	—	$1.19	$0.95
Laminated cellophane (Brand B, sold by the pound)	Single*	80	0.48	50	0.96	0.77
Laminated glassine, 10 to 24 rolls (each 1,000 ft. length)	Single*	80	—	—	0.75	0.60
Laminated glassine, 25 to 49 rolls (each 1,000 ft. length)	Single*	80	—	—	0.72	0.58
Aluminum foil (.0015 gauge) 100 lb. lots	Single*	70	0.47½	47	1.01	0.66
Aluminum foil (.0015 gauge) 500 lb. lots	Single*	70	0.44	47	0.94	0.61
Laminated aluminum foil, 10 to 24 rolls (Brand A)	Single*	80	—	—	0.97	0.78
Laminated aluminum foil, 25 rolls or more (Brand A)	Single*	80	—	—	0.93	0.74
Laminated aluminum foil, 500 to 1000 lbs. (Brand B)	Single*	80			0.70	0.56
Laminated foil and glassine, 500 lbs. or more	Single*	80	0.44	58	0.76	0.61
Pliofilm FF, 140 gauge, 2 or more rolls	Single*	80	1.15	110	0.97	0.78
Polyethylene plastic (.0015 gauge) 0-499 lbs.	Single*	80	1.10	140	0.79	0.63
Polyethylene plastic (.0015 gauge) 500 to 1000 lbs.	Single*	80	0.84	140	0.60	0.48
300 MSAT cellophane (500 lbs. Add 18c lb. for less)	Single*	80	0.54	146	0.37	—
40 lb. butcher paper overwrap (500 lb. lots)	Single*	80	0.11	75	0.15	0.52
Waxed locker paper, 48 lb. (1000 lb. lots) Brand C	Double**	200	0.17	62	0.27	0.54
Waxed locker paper, 48 lb. (1000 lb. lots) Brand D	Double**	200	0.21	62	0.34	0.68
Waxed locker paper, 48 lb. (1000 lb. lots) Brand E	Double**	200	0.23	62	0.37	0.74

* Cost estimate is based on use of a single thickness, druggist type wrap. A single thickness is sufficient when best quality materials are used and food freezes faster in a single wrap. Add 35 percent to the cost shown if a butcher type wrap is used.

** Cost estimate is based on use of a double butcher type wrap.

Prepared by Frozen Food Laboratory, Division of Horticulture, St. Paul, Minnesota.

M 5302

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

Or of Sales / Steele / Abbott

CUSTOMER	SALESMAN	DATE LAST REPORT
Snow Crop Marketers	R. M. Henry	1/21/48
ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
445 Park Ave.,	4/21/48	Clinton Industries, Clinton, Iowa.
CITY-ZONE-STATE	CLASS	INDUSTRY
New York 22, N. Y.	1-12 to 1-6	Frozen Foods.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	0						
Milprint	30-M							
Nashua	12-M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
J. Moore	Pres.	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Frozen Vegetables	150-M	MST	C	225-M
Frozen Fruits	0			75-M
Frozen Fish	20-M			50-M
TOTAL	170-M			350-M

R-12727—REV 11-47 • R-ROLLS S-SHEETS C-CONVERTED

M 5141

1. Progress of printed cellophane wraps on frozen peas.

2. Had proof s from Milprint -- look very good. Moore satisfied.

3. Current and Future Production
Working on asparagus and some other smaller items. These should hit this market in about 15 days.

Expect to start packing peas -- the first item in Cellophane, about June 1st.

APR 28 1948

Package Design Innovation -- have their design (which is effective and not dissimilar to newer Birdseye design) running vertically on the package rather than horizontally. It's the only frozen food package design that does so, and it does make it stand out.

COMPETITION - Wax. Asparagus and some others are goin in printed glossy wax overwrap by Western Wax. Moore didn't have a sample, but said it is a new development of Western's and that at a distance the gloss stands out as well as cellophane. He does, however, prefer cellophane's appearance. Only advantage of this wax is they can print in 8-colors whereas 6 is tops on

4420

205

Defendant's Exhibit No. 119

343342 O - 55 - vol 6 - 39

Cellophane. .

COMPETITION - Cans

On fruits, using Lipman (?) cans, lithographed. Says American Can and Continental will not hold up. Claims this can is only thing from ease of production and leak-proofness.

CONVERTERS

Sounds as though Shellmar is going to lose out here. They are so pleased with Milprint's work on the peas that it looks as though all the vegetable wraps will go to them since they have indicated to Moore that they can handle the whole job from supply angle.

NEW ITEM

Putting up frozen fish in Boston area in carton with printed Cellophane overwrap. This job went to Nashua due to their location. Order was for 1 1/2 MM wraps.

M 5141

REPORT OF CALL

1. Objective (reason for making call).

2. Specific results of No. 1.

3. Other information, such as:

   Assistance given and/or economy suggestions.

   Objective or objectives developed during call.

   Account knowledge—such as facts, re machine data, personnel, products, production, markets, merchandising methods, etc.

   New items (include type film and kind of package).

   Future plans—new policies—new products, etc.

   Competitive information.

   Complaints.

   Success stories.

   Sales status—(explain reason for any important change in customer's purchases).

4. Mailing list changes—customer's old name or address.

5. Action needed by (a) District Office.
   (b) Home Office.

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: Snow Crop Marketers, Inc.

SALESMAN: J. M. Hijar - F.W.Tranfield

DATE LAST REPORT: 11/8/48

ST. AND NO.: 445 Park Avenue

DATE: 1/26/49

CONTROLLED BY PURCHASING AUTHORITY: Clinton Industries Local

CITY-ZONE-STATE: New York, N. Y.

CLASS: 1-12

INDUSTRY: Frozen Foods

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	0	0					
Milprint	0							
Dobeckmun } Munson }	20-M(2)							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

RETURN TO CELLOPHANE FACILITY

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
John Moore	Pres.	X		
M. B. Barclay	V.P.	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Frozen vegetables	170-M	MSAT 87	R	500-M
Frozen orange juice	0			
TOTAL	170-M			500-M

R-12727-A * R-ROLLS S-SHEETS C-CONVERTED

N 5142

1. Decision to eliminate cellophane printed outer wrap in favor of good printed wax outer wrap and cellophane liner.

2. Printed overwrap -- will definitely eliminate Milprint wrap. Cost negative:
   Printed wax - $ 2.77 per M wraps
   " " - $ 3.74 " " "
   " Cellophane - $6.43 " " " (300 MSAT 87)

We offered to conduct survey on a wide basis to determine sales value of cellophane overwax.

R) Not necessary they stated as they had never converted completely to cellophane and they already had comparative figures.

Liner -- they stated they would still like to have the protection of cellophane on their foods and favor use of inner wrap (liner).

Cartons -- stated would like to see Marathon's Sulphite #5 with cellophane liner as they consider it a better carton than the Waldorf. We stated some work is being done in this direction.

FEB 4 1949

4422

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Defendant's Exhibit No. 120

Defendant's Exhibit No. 121

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
DEEP SEA TRAWLERS, INC.,	J. A. REED	5-3-48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
230 Bell Street Terminal	9-24-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Seattle, Washington	2-6	Frozen Food

D. Rankin
Wendler
H. Allen

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT					0	0	0	
ZPCO	0.2M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
P. S. Padelford	Mgr.	X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	* R S C	ANNUAL POTENTIAL
TOTAL				

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. 300MSAT-87 open face tray overwrap to replace foil on 6 ounce carton frozen crab meat.

2. Will not consider change at this time, but will bring up for consideration later in year.

3. During discussion on visibility Padelford said two packages out of every box of twenty-four are being overwrapped in Cellophane, to "let customer see product." Padelford convinced of value of Cellophane but said any change in packaging would have to have consent of Wakefield, Pres., and H.L.Scott, of Deming Gould, Sales Agents. Wakefield now aboard ship, but Padelford agreed to bring matter of Cellophane up for discussion later in the fall, when conference will be held.

At present have enough printed foil on hand to last through part of next year.

Presented "Food Topics" resume of impulse buying figures.

5. (b) Dunc Rankin to Note: SEP 30 '48

Subject markets, through distributors, 1# package frozen King Crab meat, packed in 1# carton with printed Reynolds foil overwrap. General distribution throughout nation in fish markets and retail grocery stores. Fish is processed and packed aboard ship in Bering Sea.

M 5305

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL
XXXX

CUSTOMER	SALESMAN	DATE LAST REPORT
General Seafoods (Div.Gen'l Foods Corp)	R. A. Dunn	

ST. AND NO.	DATE	CONTROLLED BY	PURCHASING AUTHORITY
1 Fish Pier	12/23/48	General Foods Corp., NYC	New York City

CITY-ZONE-STATE	CLASS	INDUSTRY
Boston, Mass.	B.P.	Frozen Foods

~~Letter~~
~~MT Callender (1)~~
~~V allen~~

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

RETURN TO
'CELLOPHANE'
TRADE ANALYSIS

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE
J. Kelty	P.A.	x		
R. Catty, Service Engineer		x		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL		M 5306		

R-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. Observe operation.

2. Complete tour through plant with following observations made and information obtained:

a) Yearly production of frozen fish -- approx.
   Boston ..... 30 to 40,000,000 lbs.
   Gloucester ... 20,000,000 lbs.
   Rockland ..... 20,000,000 lbs.
   Halifax,
   Nova Scotia . 20,000,000 lbs.

b) Less than 10% of fish handled is fresh.

c) Filets wrapped direct and placed in 5# and 10# unwrapped cartons before plate freeze (2-3/4 hr. overall freezing cycle).

d) 50-M lbs. of parchment scrapped as all wrapping done with cellophane resulting in nearly 100% more film consumption.

e) All wrapping by hand with sheets cut on two Everett sheeting machines (rolls of MT-35 slit before sheeting).

f) COMPETITION -- Sylvania -- About 3-M lbs. of

R-12727-B

DUPONT

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER

General Seafoods (Div. General Foods Corp)

SALESMAN

ST AND NO.

1 Fish Pier

DATE

12/23/48

CITY-ZONE-STATE

Boston, Mass.

CLASS

Branch Plant.

Sylvania purchased locally from Seafoods competitor in December due to our inability to supply sufficient quantities. None bought from Sylvania directly. Later learned J. Kelty has brother-in-law with Sylvania.

g) One lb. Consumer Unit -- Rockland, Mass. plant producing sizable quantity of one lb. frozen filets unwrapped directly but placed in carton with laminated wax overwrap. Tried foil laminated and Cellophane; but currently feel wax stands up best under plate freezing and subsequent handling. Observing progress of this output before incorporating at other plants.

h) Filets packed under 40 Fathoms and Birds Eye labels only -- have discontinued all private band contract packaging.

i) Frozen fish, in most cases, fresher than fresh fish as former is placed in frozen state within 12 hrs., after landing at piers, thus retaining freshness -- while fresh fish may not reach consumer for 3 or 4 days after landing. Average fishing trip 8-10 days.

- -

3. Recommend service call by Boston District as all management of Seafoods now at Boston, though purchasing done in New York City.

Will suggest to General Foods, NYC purchase of MAT-2 sheets at least occasionally during current film shortage; or MAT-2 rolls in 9-1/4" etc. widths, thus eliminating slitting at Seafoods (MAT-2 rolls available in smaller sizes).

Also will discuss Amsco's Simplex sheeting machine with labeling attachment developed by Amsco and our Boston District.

M 5306

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CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL

CUSTOMER	SALESMAN	DATE LAST REPORT
CASCADE FROZEN FOOD, INC.,	J. A. REED & H. D. CHICKERING	10-28-48

ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
	1-21-49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Burlington, Wn.	1-12	F.F.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0		0		0			
Milprint	1M							
Shellmar	1M							
Traver	1M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
James R. Agen	Pres.			
Richard L. Howe	Asst. Mgr.	X	S	

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Frozen Food	20M	300MST-53	C	40M
TOTAL	20M			40M

R-12787—REV. 11-47 R-ROLLS S-SHEETS C-CONVERTED

1. Discuss revised packaging plans for 1949 season.

2. Present plans are for change to new rotagravure printed Marathon wax from reverse print 300 MST-53 on all items. Are now wrapping lima beans and broccoli in wax. Change to other items will be made as printed Cellophane stock is depleted.

   Reason given for change is cost saving, amounting to approx. 40 % on a unit wrap basis. Also have been dissatisfied with type service rendered by converters.

3. In discussion on protective qualities, Howe said tests showed wax equal to 300 MST-53 in this respect. Also claims better heat seal on wax.

   Howe understands that Birdseye is planning to enter order for enough Marathon wax to wrap 200 MM consumer units.

5. B- CC: H. C. Broems, Jr. - New York.

11 5143

Defendant's Exhibit No. 123

4426

271

Defendant's Exhibit No. 124

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL

CUSTOMER	SALESMAN	DATE LAST REPORT
CASCADE FROZEN FOODS, INC.	J. A. REED	2/16/49

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
	4/28/49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Burlington, Washington	1-12	Frozen Food

Dr J Sales
Letter
Hallen

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	1M		0					
Milp.	1M							
Shell.	1M							
Traver	1M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
Richard L. Howe	Mgr.	X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT		TYPE FILM (CODE)	* R S C	ANNUAL POTENTIAL
TOTAL				

R-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. 300 MST-53 vs. Marathon wax wrap - 12oz and 16oz frozen food carton.

2. Have now decided to use Marathon "Titon" wrap on Lima Beans, Broccoli, and regular cut Beans; unprinted MST-53 on Peas, Asparagus, and French cut green Beans; on mixed vegetables will use either unprinted MST-53 or printed wax (which cost ½ that of MST-53, allowing subject to pay for ½ of plate charges in one season).
Decision to use Marathon wrap in place of previously planned Traver printed MST-53 precipitated by 25% reduction in price of Marathon "Titon". Again emphasized Cellophane's eye-appeal and impulse value. Their relation to sales. Howe brought up other major objection to use of Cellophane, distributors preference for wax because of Cellophane ends coming open. Suggested they investigate addition of glue sealing parts to package frozen food. Howe thought this good idea, and will follow with Minneman, of Package Machinery Company. MAY 4 1949
Suggested they give full consideration to idea of capitalizing on competitors decision to go to wax by hitting market with 100% rotogravure printed Cellophane wrap, liked idea, but again raised cost negative. "Titon" price reduction plus distributors preference main reasons for change to wax. 75145

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL

CUSTOMER: PICTSWEET FOODS, INC.

ST. AND NO.:

CITY-ZONE-STATE: Mt. Vernon, Wn.

DATE: 1-21-49

CLASS: 1-12

CONTROLLED BY PURCHASING AUTHORITY:

SALESMAN: J. A. REED & H. D. CHICKERING

DATE LAST REPORT: 12-2-48

INDUSTRY: F. F.

Mr Sales Nollen

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS SUPPLIER	USE THIS QTR.	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0		0		0			
Shellmar	20M							
Dobeckmun	30M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CMSE.
L. L. Brotherton	Pres.			
E.J.Watsam	Gen Mgr			
H.Foard Smith	Compt.			
Don Seaman	Sales Mgr		M	X
C. E. Lile	Asst S.M.			
Leonard C. Hammersley	Cello P.A	XX	M-S	
A.S. Rison	Asst P.A			

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	DUPONT FILM (CODE)	R S C	ANNUAL POTENTIAL
Frozen Food	225M	300MST-53	C	300M
" "	15M	300MSAT-87	C	20M
	15M	450 MSAT-87	C	20M
" "	15M	Tritec Bags	C	20M
TOTAL	270M			360M

RETURN TO "CELLOPHANE" TRADE ANALYSIS

B-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. Determine packaging plans for coming year.
2. Will use rotagravure printed Marathon wax on approx. 25% to 40% of total consumer unit output. This wrap definitely scheduled for entire frozen pea production for 1949, which represents 25% of total overwrap used. May use wax wrap on mixed vegetables and lima beans, which represent an additional 15% of total overwraps used.

   Hammersley stated that, although prefer reverse-printed Cellophane, cost of Marathon wax is 40% under printed Cellophane cost, based on unit wrap cost. Cost is sole reason for change. Are paying $1.16 per pound for reverse printed Cellophane (quantity lots). Smaller lot price is $1.25 per pound.
3. Discussed comparative protection of 300 MST-53 and Marathon wax. Claim independent tests show wax equal to 300 MST-53 in protective qualities.

   Believe rotagravure printed wax will have no detrimental effect on sales. Actual sales results when new wrap is marketed will determine course of action on future wraps.

M 5153

4428

273

Defendant's Exhibit No. 125

Defendant's Exhibit No. 126

cc: R. R. Smith - C. F. Brown
L. A. Steele

Wilmington, Delaware
February 7, 1949

H. C. BROOKS, NEW YORK
M. T. CALLENDER, BOSTON
V. C. CLARK, PHILADELPHIA
J. J. CROWLEY, CHICAGO
A. C. LOCK, SAN FRANCISCO
R. E. SIDWELL, ATLANTA
M. M. SMAT, KANSAS CITY

FROZEN FOODS

We have reports indicating that we have lost a substantial part of the Piet-Sweet business to wax paper overwrap due to cost.

I am certain you are all familiar with the Piet-Sweet Cellophane overwrap frozen food package. We know the Piet-Sweet package was looked upon as somewhat of a "bell cow" in the industry for its smart and attractive packaging, and resulted in some adoptions of a similar package by others in the industry, and created interest with others.

We give you this information that youmay become forearmed. The wax paper people can be depended upon to make the Piet-Sweet change known to the frozen food industry, perhaps long before the new wax wrap package hits the market.

We strongly suggest to those of you who have frozen food accounts marketing Cellophane overwrapped cartons, or accounts who are considering such a move, that you have your men make retail store surveys on frozen food to learn from the dealer as positive a story as can be built for merchandising and consumer acceptance of the printed Cellophane overwrap versus other frozen food packaging.

The sooner you can get your men to develop this story and make use of it with your frozen food accounts, the better opportunity you will have of holding those who are presently using Cellophane frozen food cartons and convincing others who are considering the move to take affirmative action.

A. J. HARTE

AJH:JL

H. C. LOCK: It would seem to me that you would want to be particularly active along the lines suggested here to develop a story for your frozen food accounts generally and particularly for Piet-Sweet and Cascade. Unless this and other steps are taken we feel certain the loss of Piet-Sweet will retard and possibly stop our growth in this direction in the frozen food industry.

M 5755
(4429. 274)

FILE COPY

DUPONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
PICTSWEET FOODS, INC.	J. A. REED	3/22/49

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
	4/28/49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Mt. Vernon, Wash.	1-12	Frozen Food

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0		0					
Shell.	20M							
Bobec.	25M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
L. C. Hammersley	P.A.	X		
A. S. Polson	Asst.P.A.	X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT		TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727-A * B-ROLLS S-SHEETS C-CONVERTED

1. Present additional arguments for printed MST-53 12oz. frozen food carton overwrap.

2. Discussed Cellophane's place in advertising picture as actually point of display advertising. Pointed out Pictsweet's preferred position in most display cases, and played up role of the package in obtaining this position.

   Pointed out sample carton in office overwrapped in "Titon" and showed visible evidence of dirt adhering to wax wrap. Hammersley had no convincing argument against this. Subject claims their distributors and Pictsweet management enthusiastic over wax wrap, but admitted consumer reaction as expressed in sales would be final answer.

3. In past month Marathon has reduced by 20% the price of "Titon". This makes the was wrap approximately 60% cheaper than gravure printed 300 MST-53. Hammersley mentioned that rotogravure printed Cellophane had been reduced approximately 2¢ per pound, but still could give no competition cost-wise with Marathon wrap as a result probably will wrap Brocoli in Marathon wax. Walker and Lyle out of town. Watson unavailable for contact.

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Defendant's Exhibit No. 127

M 5157

R-18727-B

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER: PICTSWEET FOODS, INC.

SALESMAN: J. A. REED

ST. AND NO.:

DATE: 4/28/49

CITY-ZONE-STATE: Mt. Vernon, Washington

CLASS: 1-12

Also disclosed that change will be made from 300 MSAT-87 bags to Marathon wax "Marapak" bags for frozen fruits. Here again cost is main reason, claiming an approximate 40% savings over Cellophane bags. Also claimed stiffer Marapak bags would, because of greater rigidity, have a more efficient run in the falling station on the production line.

Again brought up consumer's association of Cellophane with sanitation and product quality and Cellophane's part in aiding Pictsweet to gain initial consumer acceptance. This subject admitted, but will go ahead on plans to use wax bag.

M 5157

4431

2/6

RETURN TO
"CELLOPHANE"
TRADE ANALYSIS

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: PICTSWEET FOODS, INC.
ST. AND NO.:
CITY-ZONE-STATE: Mt. Vernon, Wash.
DATE: 12-1-49
CLASS: 1-12
SALESMAN: J.A. REED
CONTROLLED BY PURCHASING AUTHORITY:
INDUSTRY: F.F.
DATE LAST REPORT: 10-21-49

DU PONT CELLOPHANE SUPPLIER	DU PONT CELLOPHANE USE THIS QTR	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	FT., MT., CA. ETC	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	1M	Sylv.	BM&T	MST	0	0.5M	0	0
Shellmar	20M							
Dobek.	20M							

REPORT CALL BELOW
SEE REVERSE SIDE FOR GUIDE.

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
L.C. Hammersley	P.A.	X		
A.S. Polson	Asst.P.A.	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-1272 A * R-ROLLS S-SHEETS C-CONVERTED

1. Die-cut carton overwrap-three 5 oz. cans frozen orange juice - 450 MST-53.

2. Pointed out feasibility of packaging multiple units since retail surveys had shown most customers purchased more than one can at a time. (R) Only mild interest in multiple pack at this time, since demand exceeds supply. Admitted this condition couldchange fast, however, and will give consideration to multiple pack for future.

3. Again reviewed Cellophane advantages of eye-appeal and cleanliness on one pound frozen food carton overwrap. (R) Admit preference for Cellophane, but will continue to use marathon "Titon" wrap because of price differential. Hammersley estimates that by next year, 75% of all units will be packaged in "Titon" wrap.

M-5158

Defendant's Exhibit No. 128

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: Independence Produce Co.
ST. AND NO.: 604 2nd Ave., N.E.
CITY-ZONE-STATE: Independence, Iowa
DATE: 11-14-49
CLASS: 1-4
SALESMAN: M. M. Cleaver
CONTROLLED BY PURCHASING AUTHORITY:
INDUSTRY: Frozen food
DATE LAST REPORT: 8-26-49

DU PONT CELLOPHANE SUPPLIER	DU PONT CELLOPHANE USE THIS QTR	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	FT., MT., CA. ETC	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	Dewey & Almy	same	Cry-o-Vac	0	0	0	3 M
Traver	1 M							

REPORT CALL BELOW
SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
C. B. Stevens	Mgr.	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-1272 A * R-ROLLS S-SHEETS C-CONVERTED

1. Status re season pack on frozen eviscerated turkeys

2. Have gone to "Cry-O-Vac" on own brand turkeys. Dewey & Almy came out with new low-price "vacuumizing" equipment and showed them how to do the complete set up (which he states Traver does not do on their "Traco" bags) Vacuum pulled unit immersed in near-boiling water and 33⅓ shrinkage factor results in very good shape finished unit.

Packing Rath's private brand line in "Traco" bags, pulling vacuum on same. Continuing printed cellophane on chickens, but no requirements this season on plain sheets.

M 5090

Defendant's Exhibit No. 129

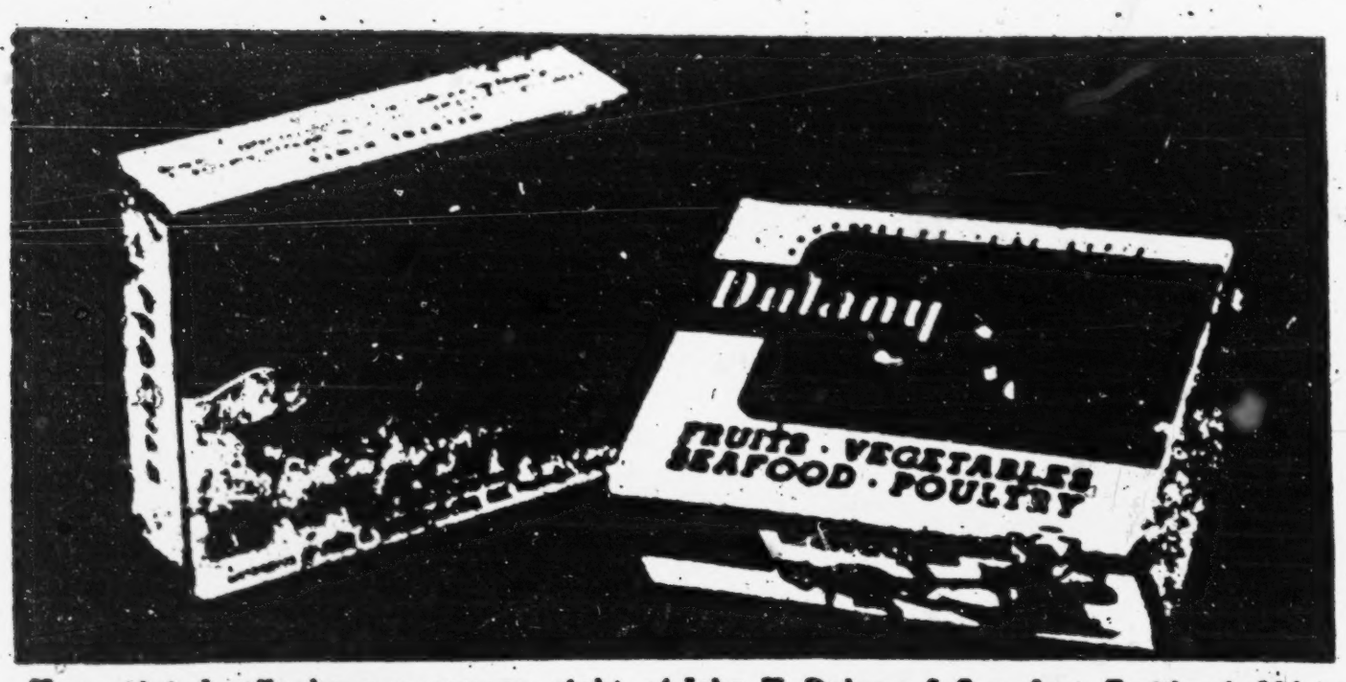
Defendant's Exhibit No. 130

EXTRACTS FROM "Q.F.F.'S ANNUAL PACKAGING REVIEW", ARTICLE PUBLISHED IN QUICK FROZEN FOODS

JUNE 1949

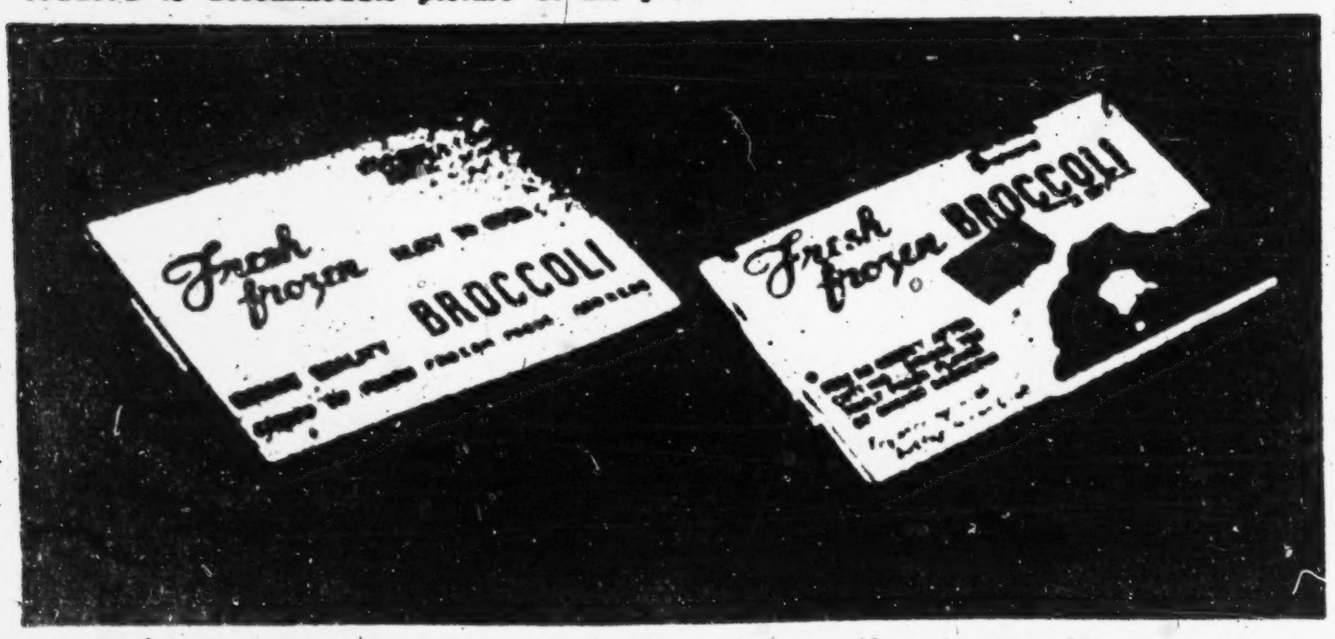
QFF'S ANNUAL PACKAGING REVIEW

Trend Toward Picturing Products in Their Natural Colors Exemplified by Contrasts of Old and Present-Day Designs



New printed cellophane overwrap, right, of John H. Dulany & Son, Inc., Fruitland, Md., gains in appeal over former design, left, by Kodachrome reproduction of contents.

Blue Goose trademark of American Fruit Growers, Inc., Los Angeles, Calif., has been reduced to accommodate picture of the product on new cellophane overwrap, right.



DuPont points up enhanced eye appeal derived from color vignettes by comparing a dummy unit of present-day design, right, with older type industry package.

THE most important packaging development during the past year has been a rapid swing to more attractive, vignette, four-color labels. Freezer after freezer has redesigned his package along the lines of merchandising appeal. Gone are the igloos, the Eskimos, the huskies and the icebergs and in their place has come the life-like color picture of the foods themselves. Proof that better labeling is the answer to bigger sales is being demonstrated daily by increasing per capita consumption of frozen foods.

On this and the following pages, QFF presents the latest in frozen food packages in a variety of wrappers; cellophane, waxed paper, foil —in fibre cans, in laminated cartons. Few industries can boast of having switched over so quickly and successfully to greatly improved labels in so short a time.

State of Flux

Nevertheless, frozen food packaging is still in a state of flux. There is perhaps less standardization today than there was two years ago. This is due to two reasons, 1) the tendency, especially in fruits such as strawberries, and in some specialties such as pre-cooked shrimp, to go to a wider range of unit sizes; 10 oz., 12 oz. and 16 oz. 2) The greater variety of products coming on the market call for a big selection of all kinds of packaging materials, cellophane, foil, plates, waxed wrappers, bakery cartons, window trays, etc. The frozen orange juice concentrate has introduced the 6-oz. can to this industry. Fibre cans are being over-wrapped in printed cellophane. Thus any standardization on one type of over-all packaging for frozen foods seems increasingly remote and it looks as if all types of good, moisture-proof packaging materials have an opportunity in this industry.

It seems very unlikely that this industry will ever adopt one container (such as the canning industry), because of the number and variety of

M 5307

products packed, individual merchandising preferences, types and varieties of freezing and packaging procedures. Add to this the constant appearance of new packers with new products, the still uncompleted revolution in store cabinet design and the necessity for keeping certain types of products in specific containers and it is readily apparent that the field is wide open.

Of course, speed of filling is the primary requisite today as production grows and recent speeds have reached 125 per minute, a far cry from the 35 to 40 fillings per minute that prevailed a few years ago; this of course is due to automatic packaging machines. Yet packaging is still the bottle-neck in the freezing operation, especially the one pound deal in fruits and semi-liquid packs. There is no question but that the near future will bring new methods of packaging. Some are already in the works and should be ready next year, if not sooner. As these new methods are introduced, freezers will be increasingly faced with the necessity of junking an old system in which considerable money may have been invested, and installing a new one. But if the new system proves better in the long run the old one should be discarded even though the immediate expense may be great. It's the long run that will count in this industry.

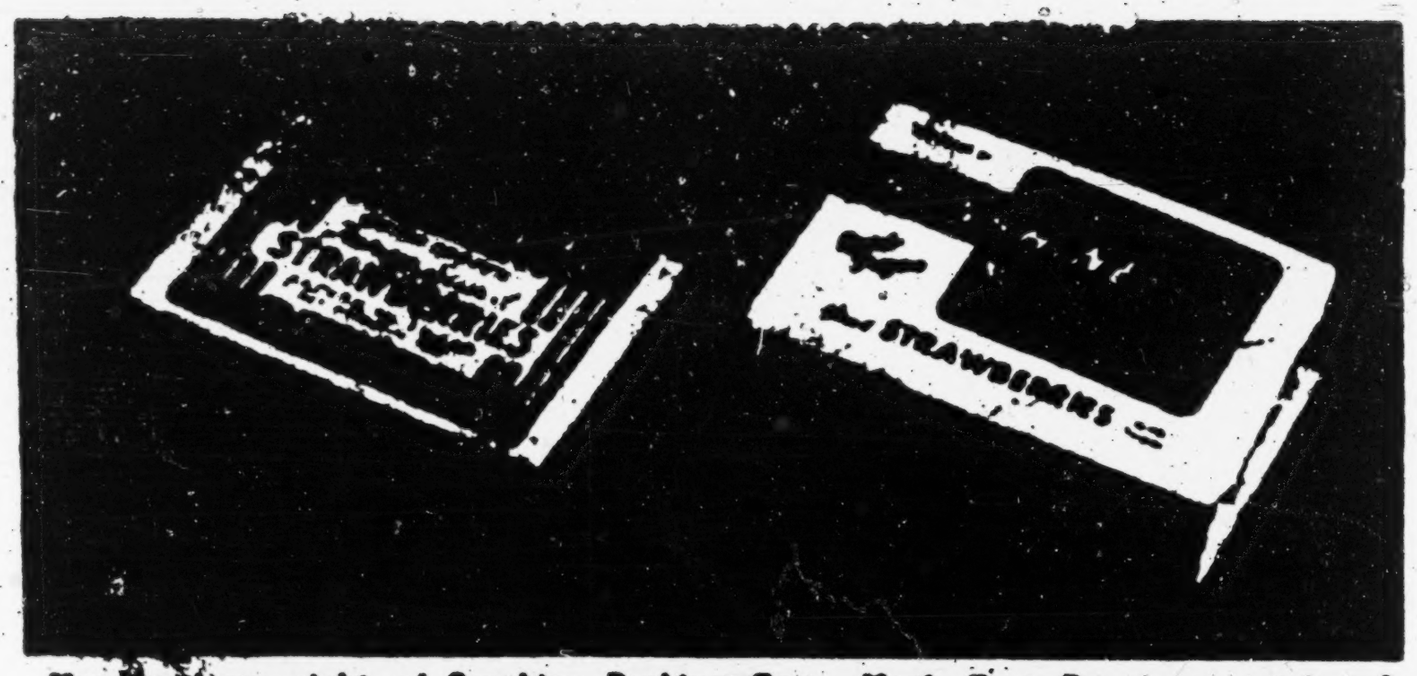
Problems to Be Overcome

The fibre can took immediate hold two years ago and is being used again this year. At least one manufacturer promises to bring out a new can in the near future with improved labeling and a better method of opening for the consumer. A labeling machine has been developed for the fibre can also. Foil wraps offer certain advantages in freezing and certainly in distinctiveness of appeal, but they are somewhat higher priced. Laminated foils seems to be the answer; a certain manufacturer recently introduced a laminated foil carton. Aluminum foil may yet become popular for the cooking of frozen foods.

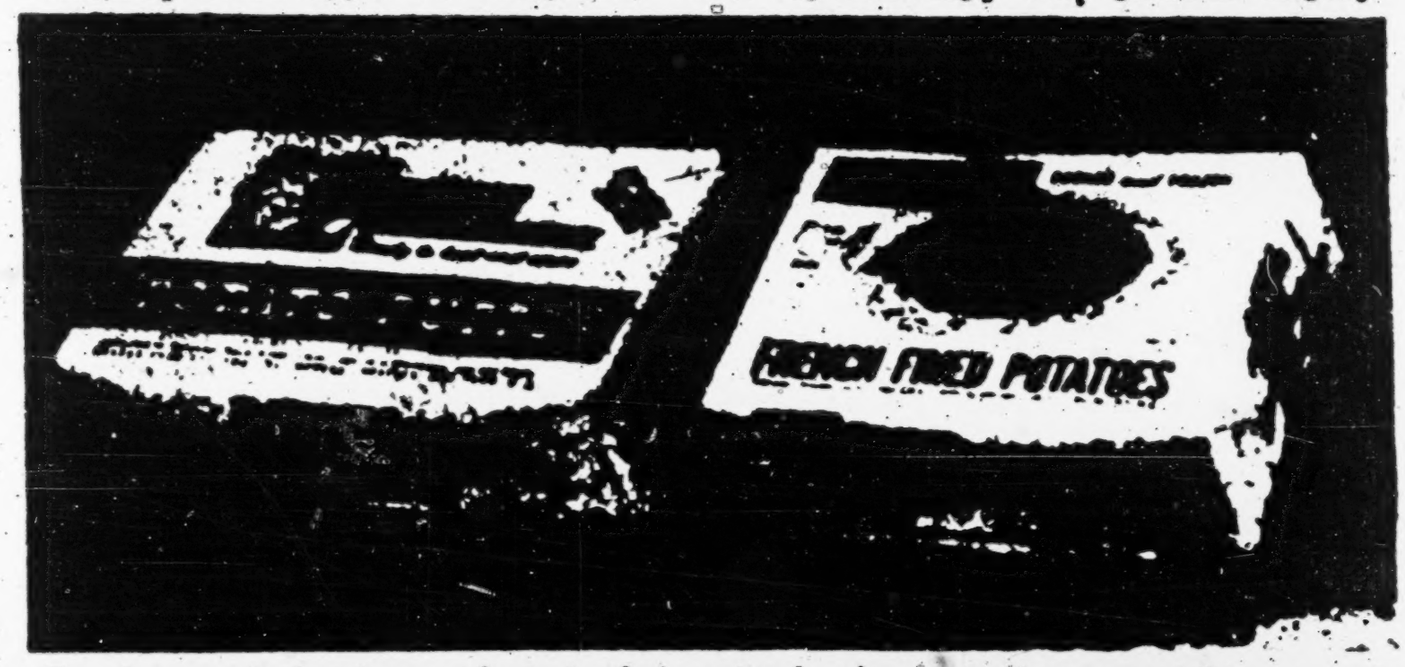
About a year ago there was a marked trend toward the single container for frozen foods; a laminated carton without inner or outer wrap. This trend, while still apparent has not had the broad sweep expected of it and the inner liner and outer wrap still hold sway. The largest freezer Birds Eye, because of its contact plate method of freezing, still employs the waxed outer liner.

The Stokeswrap bag machine is

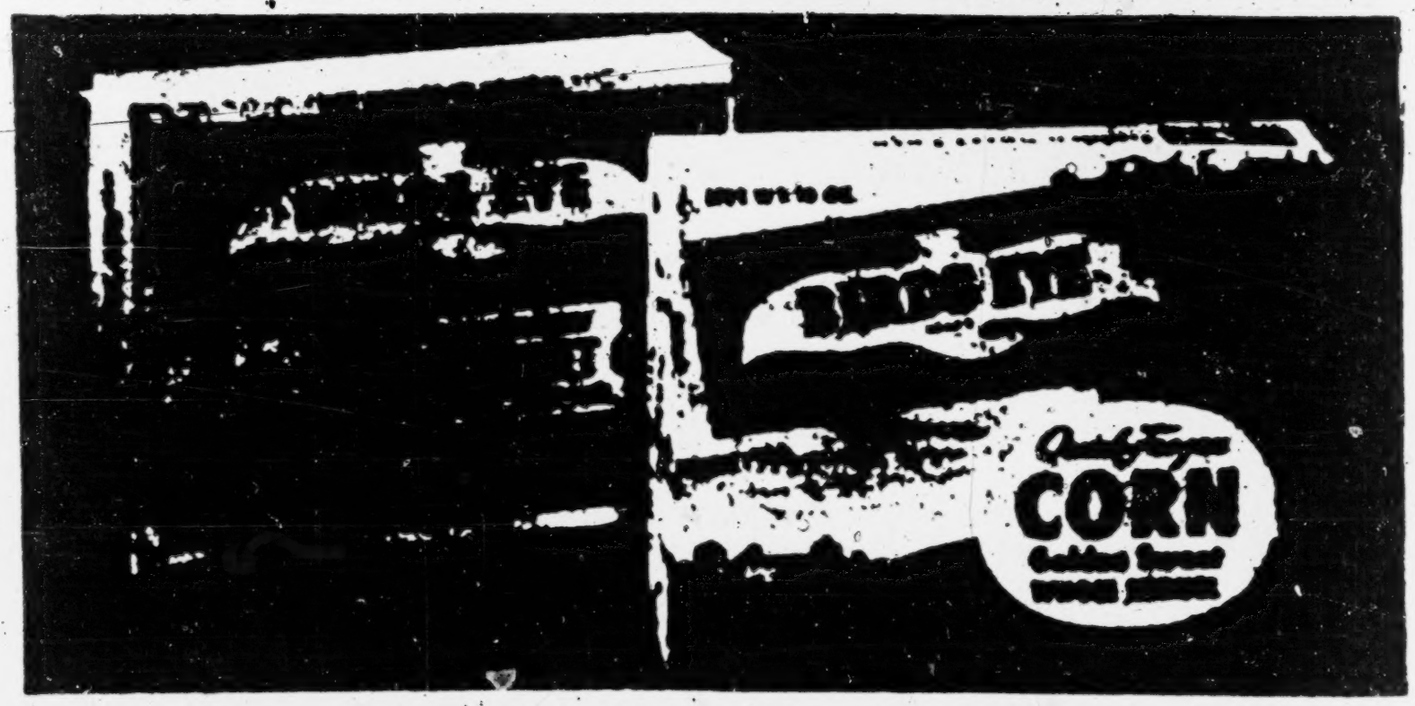
(*Continued on page 71*)



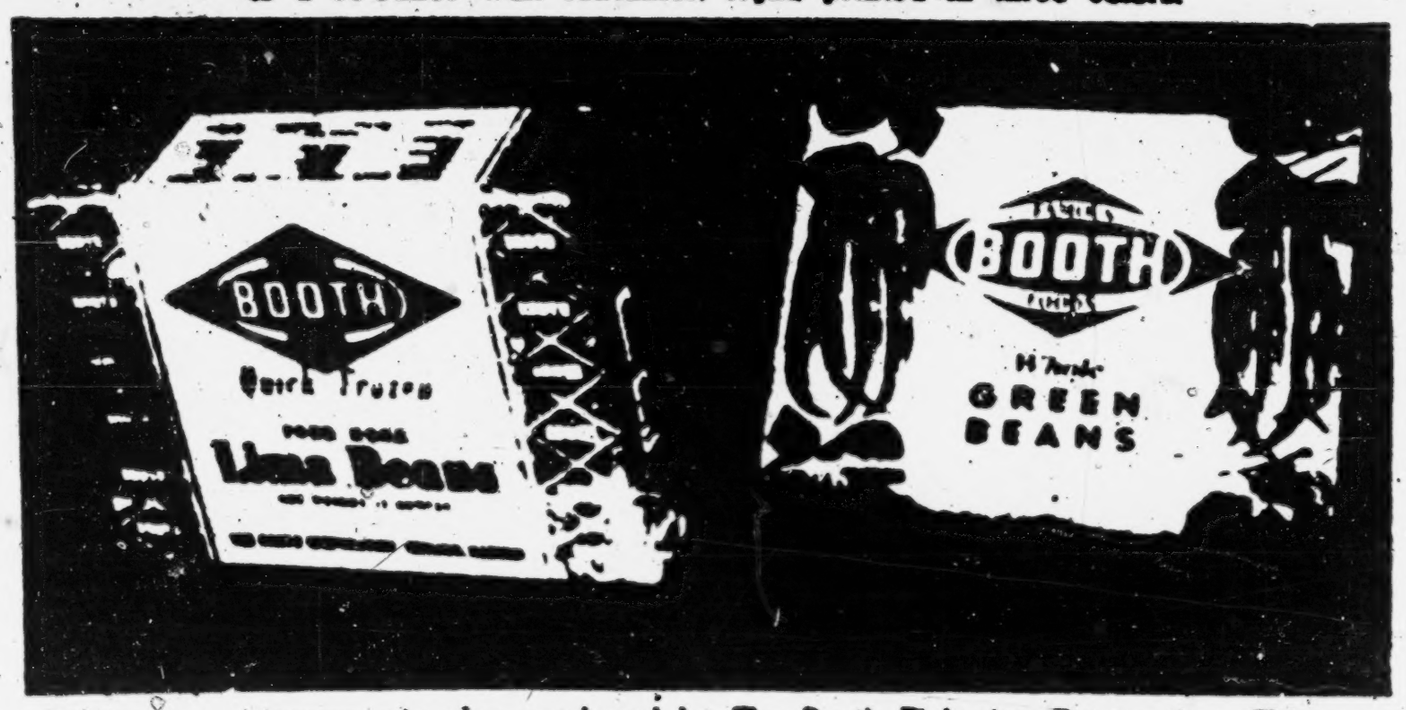
New packages, right, of Sunshine Packing Corp., North East, Pa., is a metal end centrally overwrapped in cellophane which replaces copy with pictorial display.



Trend toward showing products in their natural colors extends to specialties as evidenced by new cellophane overwrap, right, of Mannan Food Systems, New York, N. Y.



Latest package of Birds Eye-Snider Division, General Foods Corp., New York, N. Y., is a 10-ounce wax container, right, printed in three colors.



Printed wax overwrap is also employed by The Booth Fisheries Corporation, Chicago, Ill., whose new package, right, employs full-color reproduction down both sides of carton.

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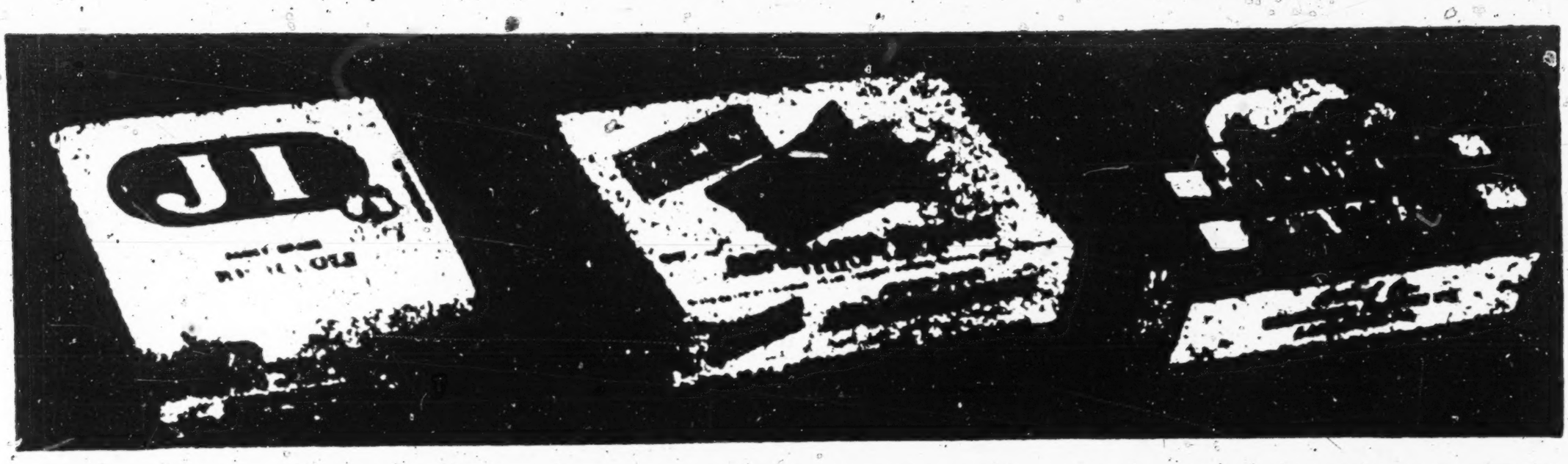
Some Fruit & Vegetable Packs Using Wax Overwraps

Boxboard Carton Heatsealed with Waxed Paper Is Proving a Popular Package in the Industry



John Inglis Frozen Foods Co., Stockton, Calif., uses waxed paper overwrap for J I brand printed in color.

Natural color reproduction of asparagus marks wax overwrap of Fairmont Foods Co., Omaha, Neb.

Color printed waxed overwrap packages of Consumers Packing Co., Lancaster, Pa., for green baby lima.

Dempsey-Hudson Packing Co., Salinas, Calif., packs broccoli in 10-oz. carton with waxed paper color overwrap.

New package of Snider Farms Co., Gresham, Ore., is 1-pound carton with waxed overwrap bearing color picture.

Olney & Carpenter, Inc., Wolcott, N. Y., packs lima beans in 12-oz. carton designed with color waxed overwrap.

Wax overwrap carton of Golden Eagle Export Corp., New York, N. Y., blends red and gold on blue background.

Southland Frozen Foods, Inc., New York, N. Y., uses 10-oz. Marathon carton with wax overwrap printed in three colors.

Winter Queen brand of Fresh Frozen Foods, Los Angeles, Calif., is packed in wax overwrapped carton printed in color.

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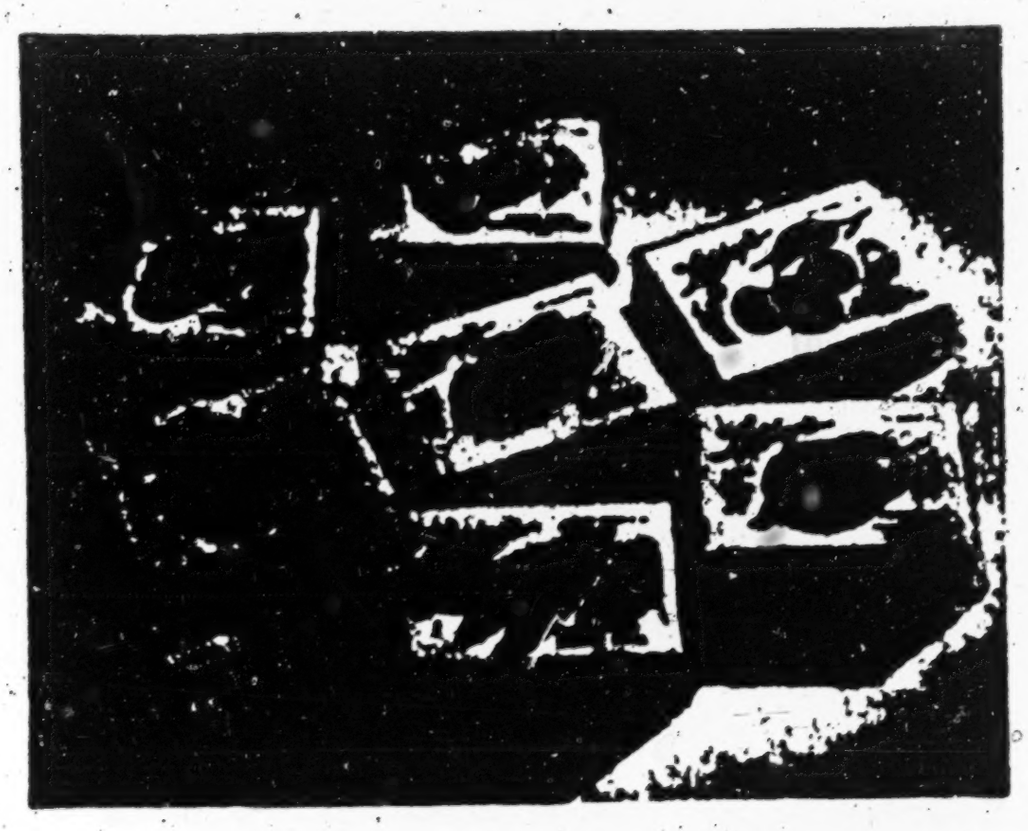
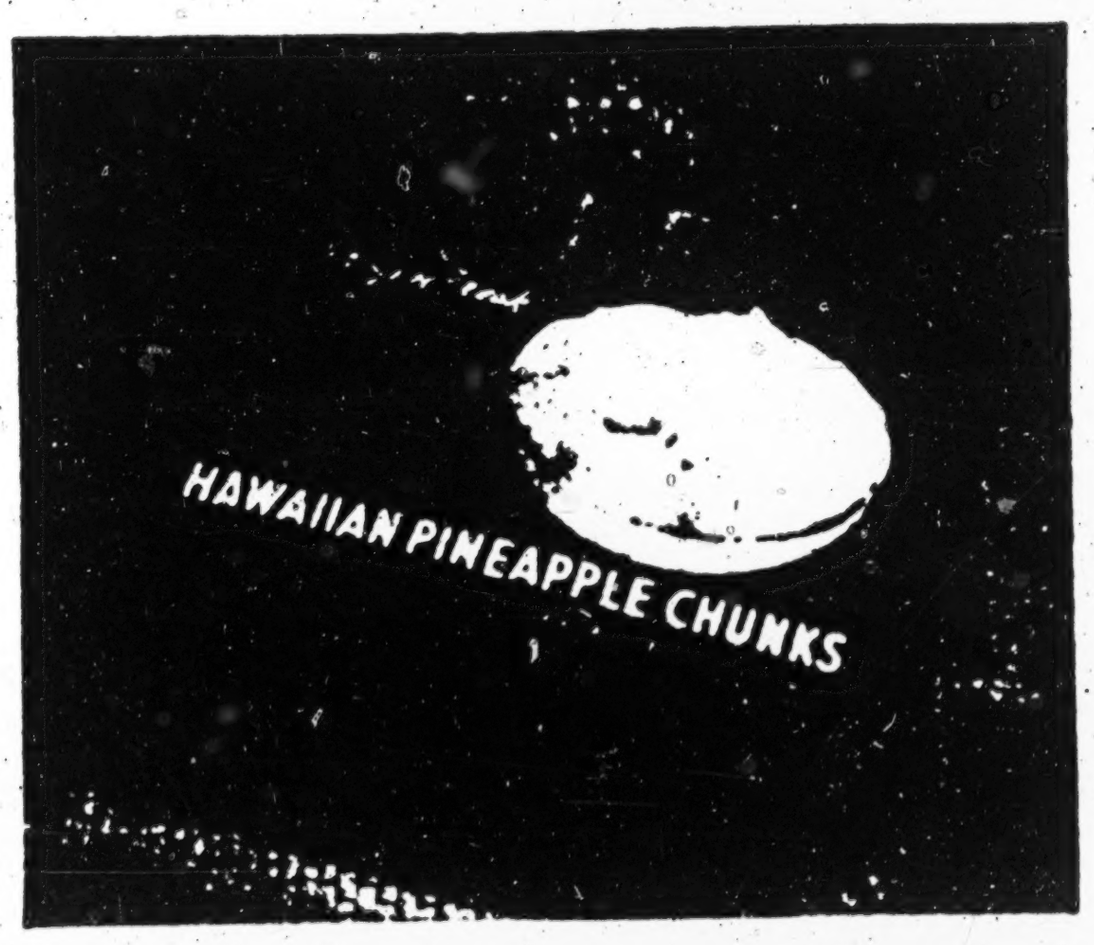
Some Packages Employing Cellophane Overwraps

Growing Prominence of Vignettes in Color Reflected in These Representative Designs

Snow Crop Marketeers, Inc., New York, N. Y., top, uses cellophane overwrap on its new 10-ounce cauliflower package. Full-color design of 12-ounce cellophane overwrap of PictSweet Foods, Inc., Mount Vernon, Wash., center, is characterized by dramatic simplicity. 12-ounce okra package of Lafayette Frozen Foods, Lafayette, La., below, blends green and red on white.



Wide variety of frozen fruits and vegetables packed by Libby, McNeill & Libby, Chicago, Ill., employ cartons overwrapped with printed cellophane which illustrate the products in color vignettes.

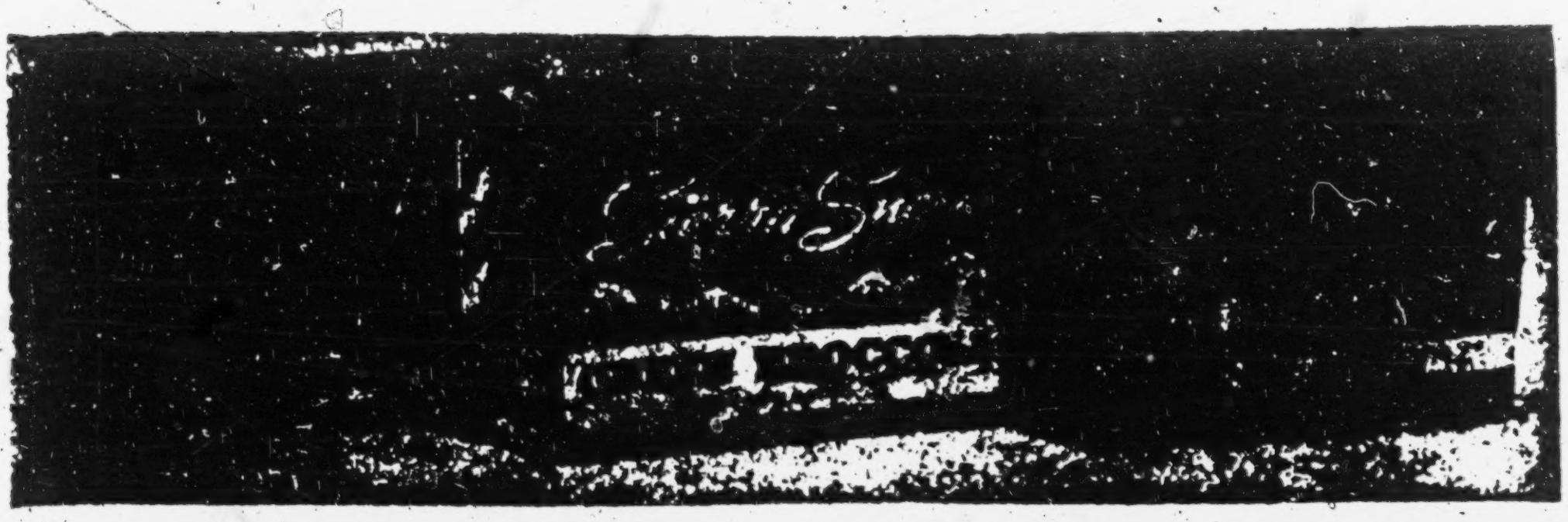


Hawaiian Pineapple Co., Ltd., Honolulu, T. H., utilizes printed cellophane overwrap on its 16-ounce cartons to depict pineapple chunks in their natural color. Package is characterized by red lettering of brand name "Dole" on blue background with other lettering in white. Pineapple chunks are shown in dish and directions for storing and suggested uses are printed on back of carton. Package was designed by Milprint, Inc.

M 5307

Some Fruit and Vegetable Packs Utilizing Foil Overwraps

Material Readily Adaptable to Wide Variety of Designs



Braddock Frosted Foods, Inc., Braddock, N. J., packs cut corn in 12-ounce cartons overwrapped with foil in color.

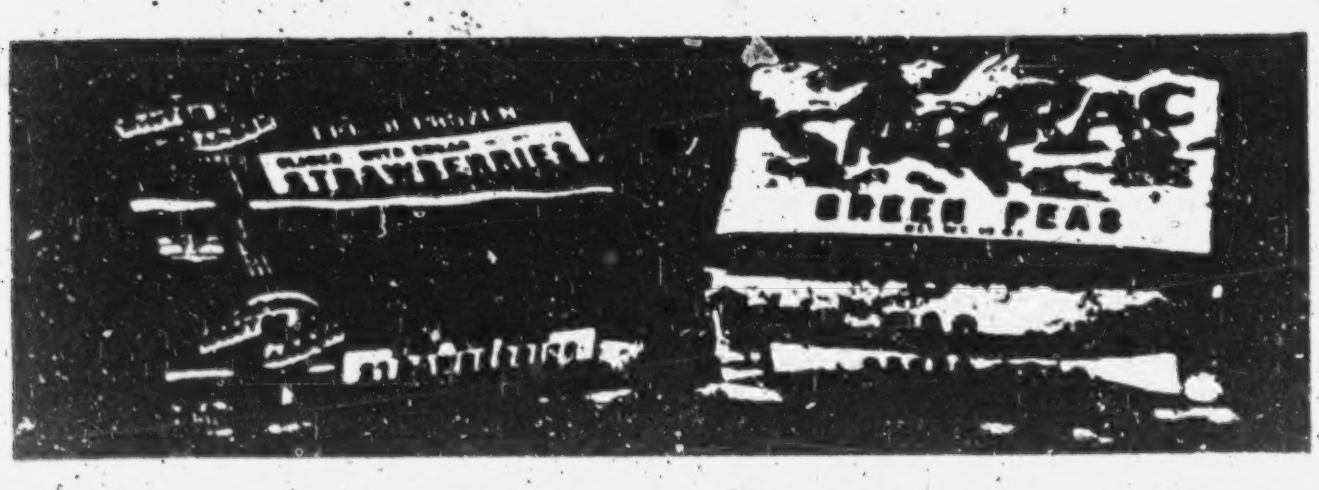
Ten-ounce carton with 3-color printed foil overwrap is employed by A. D. Atterbury Co., Yuba City, Calif.

Cedarpoint Frozen Pack Corp., Bellingham, Wash., utilizes foil overwrap printed in three colors.

Ten-ounce carton wrapped in printed 3-color foil is used by Alderman Farms Frozen Foods, Inc., Dayton, Ore.

Lafayette Foods, Inc., Lafayette, Ind., packs lima beans in 12-ounce carton overwrapped in foil printed in 3 colors.

H. G. Bauer Co., Seattle, Wash., uses a 12-ounce carton overwrapped in printed 3-color foil.



Strawberries are packed by the Winter Garden Co., Inc., Knoxville, Tenn., in 10-ounce cartons overwrapped in foil.

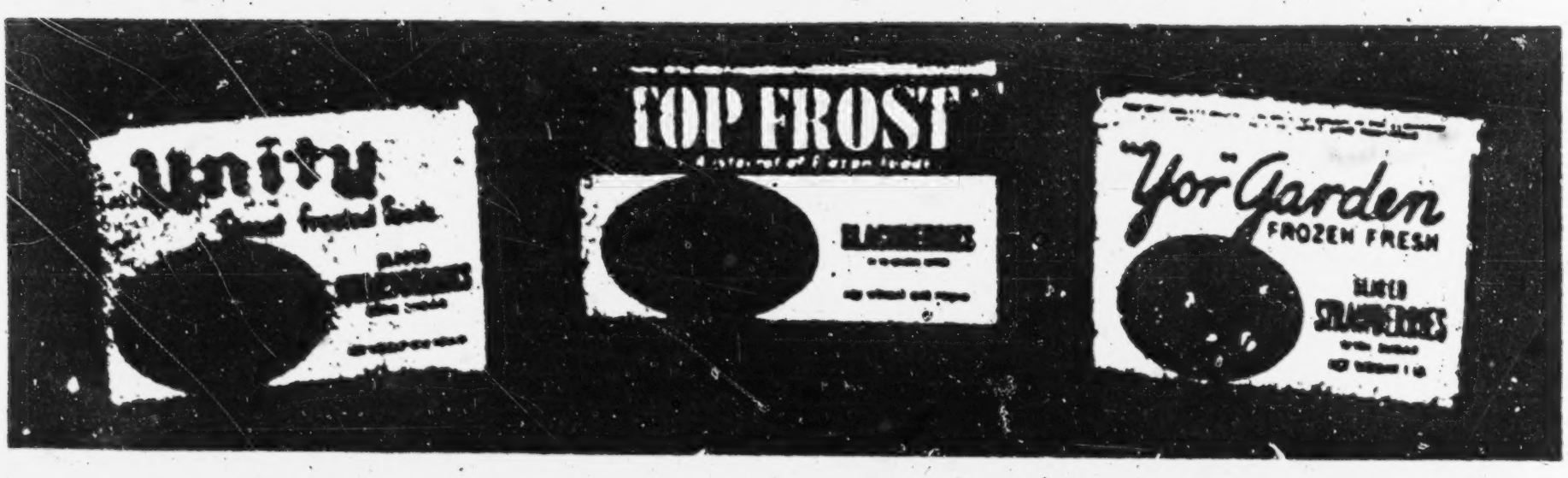
Twelve-ounce package of Caledonia Cold Storage Co., Caledonia, Minn., is wrapped in printed 3-color foil.

Package of Pennsylvania Frosted Foods Corp., Southampton, Pa., uses blue and yellow foil overwrap.

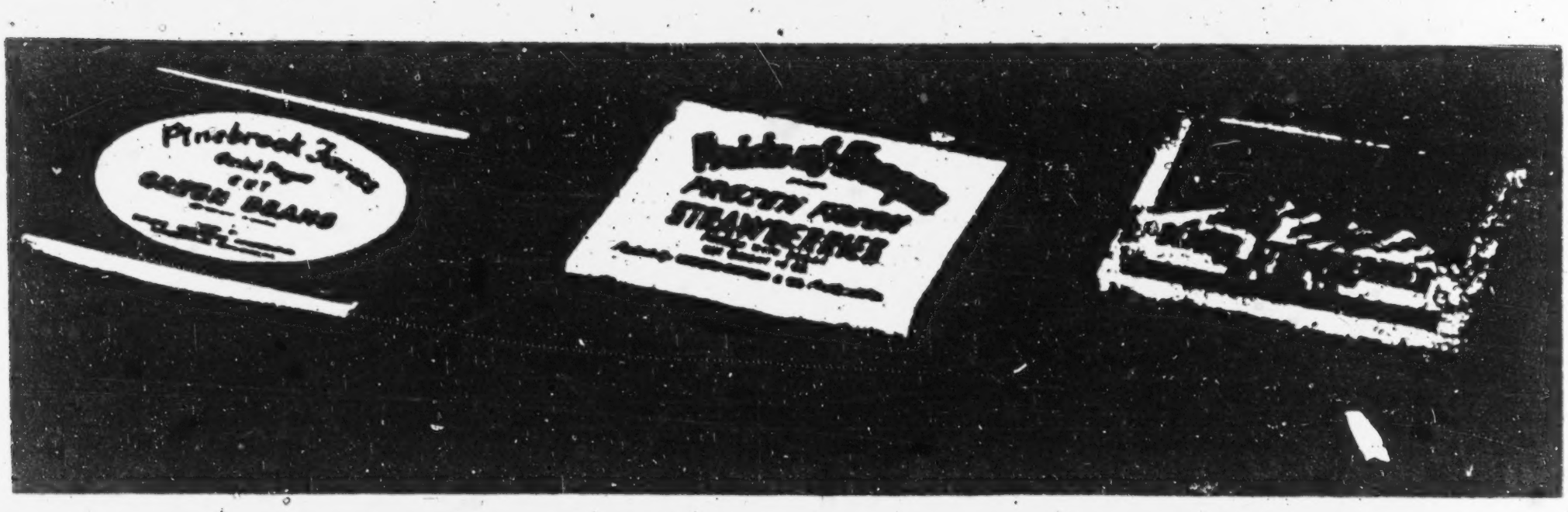
M 5307

Representative Industry Use Of Metal End Containers

Composite Fiberboard Units Have Wide-Spread Adaptations



Three examples of chain-owned brands utilizing metal end containers. Left to right: Unity sliced strawberries packed for Frankford Grocery Co., Philadelphia, Pa. Top Frost blackberries packed for Top Frost Foods, Inc., San Francisco, Calif., and distributed to retail food outlets. Yor Garden brand packed for First National Stores, Inc., Somerville, Mass.



Metal end containers printed in colors are employed for green beans and strawberries by Skyland Processing Corp., Hendersonville, N. C.; Hudson-Duncan & Co., Portland, Ore.; and Kelley Farquhar & Co., Seattle, Wash.

Washington Packers, Inc., Sumner, Wash.; Cascade Frozen Foods, Inc., Seattle, Wash.; and Venture Farms Frozen Foods, Inc., Oxnard, Calif. Dewkist and Agen packages are 1-pound units. Fordor is a 12-ounce container.

M 5307

Packaging Problems

(*Continued from page 50*)

packages had begun to appear.

The war years, of course, gave tremendous impetus to the entire industry, but from the standpoint of packaging, relatively little progress was shown because of the wartime scarcity of packaging materials of all kinds.

Three Cardinal Principles

With the continued growth of the industry in the post-war years, particularly after the 1947 shake-down, it has become increasingly apparent to processors that their consumer-size packages must embody three cardinal principles: (1) protection, (2) convenience and (3) attractiveness.

Manufacturers of all types of packaging materials have devoted a great deal of attention to the development of materials specifically suited to these needs. As mechanization of the packaging operation proceeds, there will undoubtedly be further changes, but these are likely to be more in the form of the package rather than in basic materials. The processor of quick frozen foods today can choose between a number of materials, all with proven performance records and each possessing the basic necessities for a good package. At present the most popular package appears to be a one-piece folding carton made of high-grade waxed boxboard. Cartons of this type are available for practically every kind of frozen product, although in some cases it is still desirable to employ inner liners, especially for "wet-packed" products.

These cartons have the advantage of being relatively inexpensive and some processors have accomplished a very high degree of standardization on sizes so that they are able to buy unprinted cartons in the quantities offering them the greatest economy. After filling, these cartons are mechanically overwrapped with protective heatsealing materials.

Metal, Fiber Cans Popular

Metal and fiber cans are popular among processors whose products are packed in syrup. Quite recently a machinery manufacturer announced the perfection of a method whereby cans of this type may be overwrapped with printed Cellophane wrappers. This permits the integration of items in such packages into a "package family," the other items of which may be packaged in cartons with Cellophane overwraps.

Trays of metal foil are available either preprinted or unprinted, and overwraps of metal foil with coatings making them heatsealable are also becoming popular in many places.

Vignette Reproduction

Possibly the most spectacular trend took place when processors who were also canners took a leaf from their own book of experience and began to use vignette reproductions of actual color photographs of their products in their fresh state both as a means of product identity, and in order to confer selling appeal on their packages. Postwar development of the process of printing on the under side of Cellophane wrappers has made tremendous strides, and several well-known brands are now completely converted to Cellophane overwraps with full-color pictures of fresh product.

With practically every new home refrigerator built since 1940 having a compartment for either the quick freezing of foods or the storage of commercially frozen foods, and with reasonably priced home cabinets for frozen foods now available, it is perfectly reasonable to assume that the market for consumer size units of foods of all types will continue to grow.

Manufacturers of packaging materials and package fabricators are keenly aware of this trend. Unquestionably the art of packaging quick frozen foods will continue to move forward until it is on a level with or surpasses the art of packaging the same foods in their unfrozen forms.

Trends in Packaging

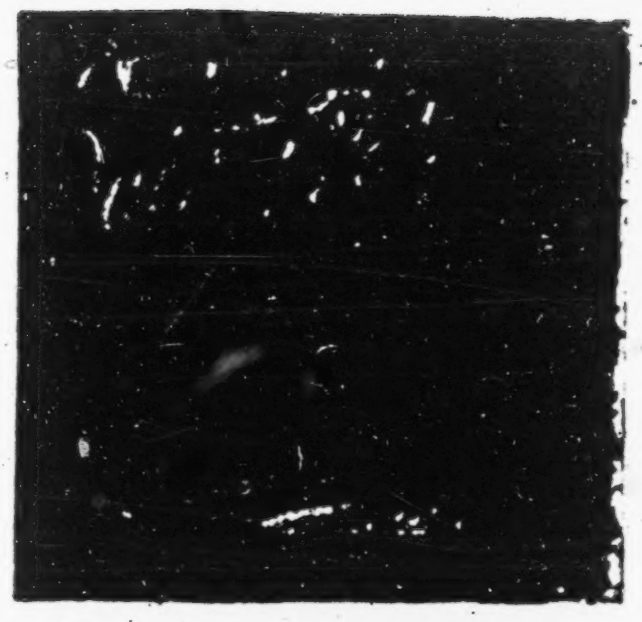
(*Continued from page 45*)

still being offered and more dry products are being packaged in this way; peas, lima beans, cut corn, etc. As frozen foods reach more varied strata of buyers, a greater variety of sizes will be in demand; thus 8, 10, 12 and 16 oz. bags may provide the answer.

New films such as polyethylene, Vis Queen and polythene are all being offered as a protective covering for not only fruits and vegetables but especially for flesh foods such as fish, poultry and meats. Never before has the frozen foods industry been presented with such a wide array of packaging materials to choose from. Most of the standard wrapping machines are being used and because of the greater variety of sizes those offering flexibility in range are increasingly desirable.

Window Packages Return

The window type of package has had its ups and downs since the industry's inception. First popular, it was little used later but more recently window packages are coming back, especially in items like baked goods, specialties, fish fillets, etc. With the increase in quick frozen meats and poultry the old debate of visibility versus the closed, branded package is again being revived with proponents for both sides. In the meat line, the recent acceptance of pre-packaged cut meats has spurred the greater use of cellophane and since pre-cut meats are considered to be but a step away from quick frozen pre-cut meats, many local lines are also using the cellophane wrap. On the other hand meat packers with national names such as Swift and Armour seem to prefer the closed cartons, taking advantage of the reputation of their known brands.



One-pound tin used by Pacific Grape Products Co., Modesto, Calif., for Dainty Pak frozen fruits.

In the long run it would seem that the trend of packaging will be principally influenced by two main factors in this industry: 1) the method of freezing employed, and 2) the type of product and how it can be most attractively labelled. With the exception of one large freezer, many products today are frozen first and then packaged. Quick filling here is important. Other freezers fill the package and then freeze the product by air circulation methods. The contact plate method of freezing lends itself to still another method of packaging. On the whole however, the packaging operation is still thought of as two separate operations, one which means getting the product into the best possible container from a protection standpoint and the next operation which is that of labelling. This generally means an over-wrap. Packaging companies are still working to combine both of these processes into one operation which will satisfactorily provide the necessary holding and protection facilities and good and effective labelling at the same time.

M 5307

4440

285

✓ Defendant's Exhibit No. 131

SMC-1 REV. 10000-8-4-33

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman Swartwout Date 6-15-33 No 508

Firm Piggly Wiggly Stores Bus Gh. Groc. Class 1-4

St. & No. 209 N. Hawkins St. City Dallas State Texas

Controlled by: Same and Kansas City

Final Decision by (Titles) Mr. James, Mgr. Contacted on this call? yes

Buyer Contacted on this call?

Others Contacted this call (Titles)

Type of Call—Productive X Service

Sources of Supply	Est. Cons.-lbs. This Quarter	If using competitive material, state type and reasons
Dobeckmun	400	(bags)

Items wrapped in Cellophane: Dried fruits and loose vegetables, etc.

Other products on which Cellophane could be used; (Note-new products in work) Bread, tomatoes and grocery items

a. Sales tools used on this call

Samples Tray Disp. Photos X Pack. Dev.

Cons. Ads Trade Ads X Mkt. Sur.

b. Agreement account? yes

c. Did you secure order? no

d. Service and general remarks—below

(287) P. 4442

DU PONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL

CUSTOMER	SALESMAN	DATE LAST REPORT
Connecticut Tomato Packers	E. D. Swain	9/8/47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
76 Silver St.	11/4/47	

CITY-ZONE-STATE	CLASS	INDUSTRY
New Haven, Conn.	1-12	Fresh Produce

~~Drew~~
~~Dentler~~
~~CA~~
~~L~~

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THRU	PT. MT. CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	Sylvania	Direct.	LST	1,000#	1,500#	500#	
		Celanese	Direct	88 CA			1,000#	3,000#

REPORT CALL BELOW
SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
P. B. Elbaum	Mgr.		M-S	
Mr. Brosko	New Haven Mgr.	X		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
Tomato tray overwrap	12M	88 CA-48	R	15M
TOTAL				

1. Check Du Pont position here.
2. Mr. Elbaum not present - so did not learn this.

   No longer uses Cellophane.
3. AK - Competition - Celanese lumarith, gauge 88, Formula P-912 now being used. PM converted new FA machine converted in late summer equipping with glue pots for acetate use. Likes acetatt much better, saying tomatoes last longer and look better under CA. Believes this sa justifies additional cost. CA not perforated as was Cellophane. Cancellation of Du Pont Cellophane on delivery, failure to advise of CA plans and attitude here proves this to be .. one account where our wartime efforts were not appreciated.

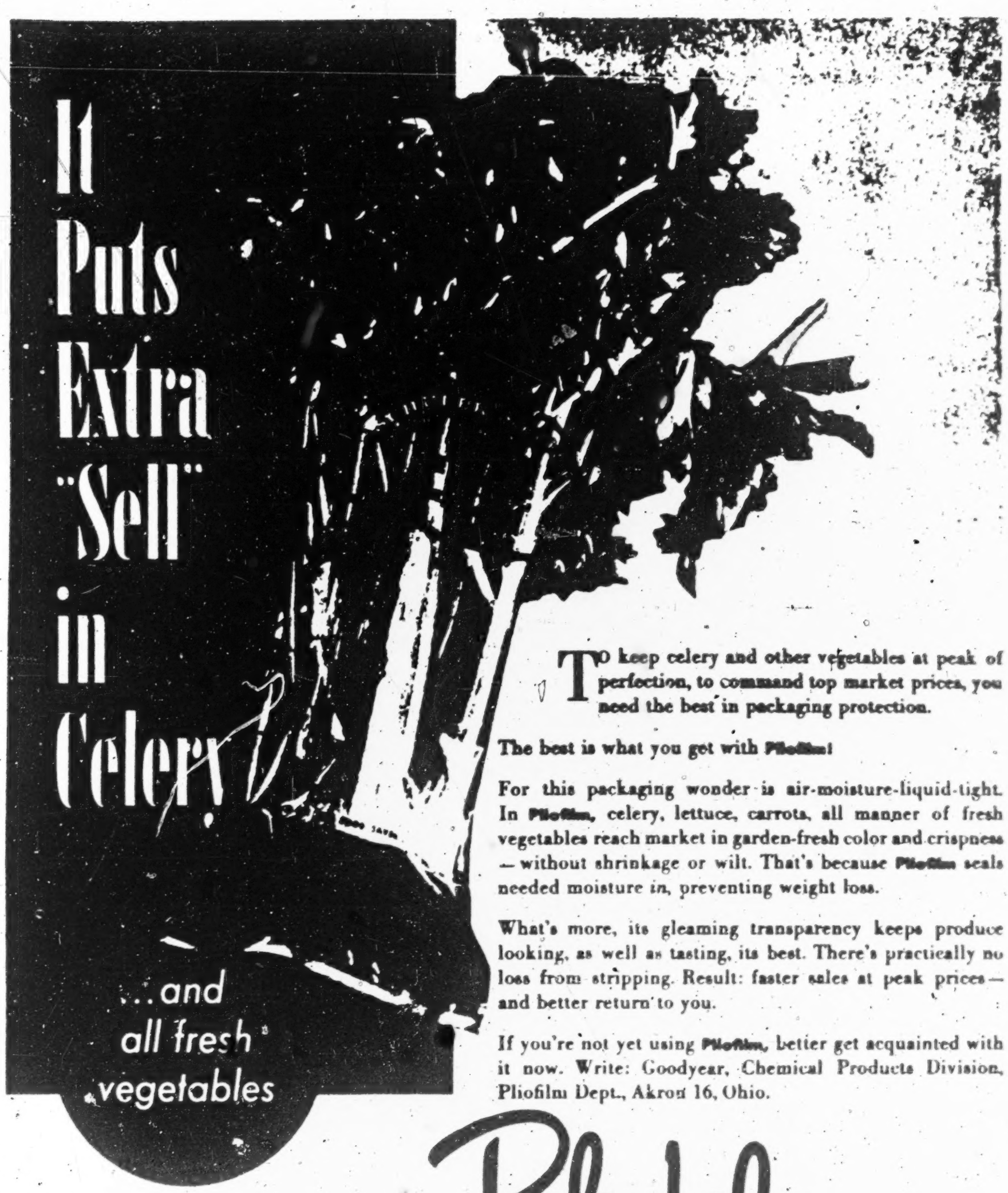
RETURN TO "CELLOPHANE" TRADE ANALYSIS

M 5096

R-12787—REV. 2-47

Defendant's Exhibit No. 132

Defendant's Exhibit No. 134



To keep celery and other vegetables at peak of perfection, to command top market prices, you need the best in packaging protection.

The best is what you get with Pliofilm!

For this packaging wonder is air-moisture-liquid-tight. In Pliofilm, celery, lettuce, carrots, all manner of fresh vegetables reach market in garden-fresh color and crispness — without shrinkage or wilt. That's because Pliofilm seals needed moisture *in*, preventing weight loss.

What's more, its gleaming transparency keeps produce looking, as well as tasting, its best. There's practically no loss from stripping. Result: faster sales at peak prices — and better return to you.

If you're not yet using Pliofilm, better get acquainted with it now. Write: Goodyear, Chemical Products Division, Pliofilm Dept., Akron 16, Ohio.

Everything is better in Pliofilm

3-way protection against air, moisture, liquids

GOODYEAR

THE GREATEST NAME IN RUBBER

Pliofilm—T. M. The Goodyear Tire & Rubber Company

Pre-Pack-Age

April 1948

M 5308 B

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Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
3-22-33	8-17-33	8-18-33	

CREATIVE WORK DONE

1. New items on market since last call -distribution, potential.
2. Result of suggestions made on last call
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1 - None.

2 - None definite.

3 - Presented tomato survey and urged action on higher grades of same in P.T. and stressed success of same in many markets. Also again covered story on special breads in M.S.T. and urged he act on same for a sliced rye pointing out could tie in with beer that is coming to this territory in Sept. Above is cost minded on tomatoes and will not act. For bread he claims costs too much overwax paper and is very much against same because of this. Claims it will only increase his wrapping costs and success of same in all markets seemed to mean nothing to him.

4 - Keep after tomatoes and special breads in Cellophane

5 - None.

H 5131

(288) P. 4443

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL

CUSTOMER: Connecticut Tomato Packers	SALESMAN: E. D. Swain	DATE LAST REPORT: 11/4/47	~~Dent~~ ~~Wentler~~ ~~CA~~
ST. AND NO.: 76 Silver St.	DATE: 12/4/47	CONTROLLED BY / PURCHASING AUTHORITY	
CITY-ZONE-STATE: New Haven, Conn.	CLASS: 1-12	INDUSTRY: Fresh Produce	

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR	COMPETITIVE MATERIALS MANUFACTURER	BUYS THRU	PT. MT. CA. ETC.	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR PUR
DU PONT	1,000	Sylvania	Direct	LST	1,000#	1,500#	500#	
		Celanese	Direct	88 CA			1,000#	3,000#

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIAL	TITLE	INT'VD	MAIL TO	M. L. CHGE
P. B. Elbaum	Mgr.		M-3	
Mr. Broske	New Haven Mgr.	X		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM CODE	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL

TOTAL

1. Du Pont 88 CA-48 - tomato tray overwrap.
2. Sold 1M lbs.
3. AK - Intends to package full line of fresh vegetables (spinach, salad, soup mix, celery) in CA. Intends to use printed CA sheets for celery overwrap (hand wrap) and unprinted CA bags with printed informative labels stapled to seal package.

Believes CA will prove to be a much better film for fresh produce than any Cellophane now on the market.

DEC 16 1947

RETURN TO "CELLOPHANE" TRADE ANALYSIS

M 5098

Defendant's Exhibit No. 133

Defendant's Exhibit No. 135

SELL GARDEN FRESHNESS with **LUMARITH*** Transparent Film

People want freshness . . . and that's why produce, meats and dairy products prepackaged in Lumarith transparent film move faster from the counters.

Lumarith wraps and bags remain permanently crisp even when wet . . . won't fog up under refrigeration . . . allow contents to "breathe" — to keep fresh and flavorful longer.

WHETHER YOU BUY OR PREPACKAGE YOUR OWN MERCHANDISE, YOU'LL NEED LUMARITH TO GET ALL THESE ADVANTAGES

GAS PERMEABLE, FOR FRESH FOODS
MOLD AND FUNGI PROOF
DOES NOT SHRINK OR WRINKLE
DOES NOT FOG UNDER REFRIGERATION
MEETS REQUIREMENTS OF B.A.I.
WATERPROOF
ALWAYS CRISP
CEMENTS INSTANTLY
ODORLESS AND TASTELESS
GREASEPROOF

For all fresh food packaging, insist on Lumarith. Write for illustrated prepackaging booklet. Transparent Films Department, Celanese Plastics Corporation, division o Celanese Corporation of America, 180 Madison Avenue, New York 16, N. Y.

Celanese Plastics

CHAIN STORE AGE JULY 1947

M 5309

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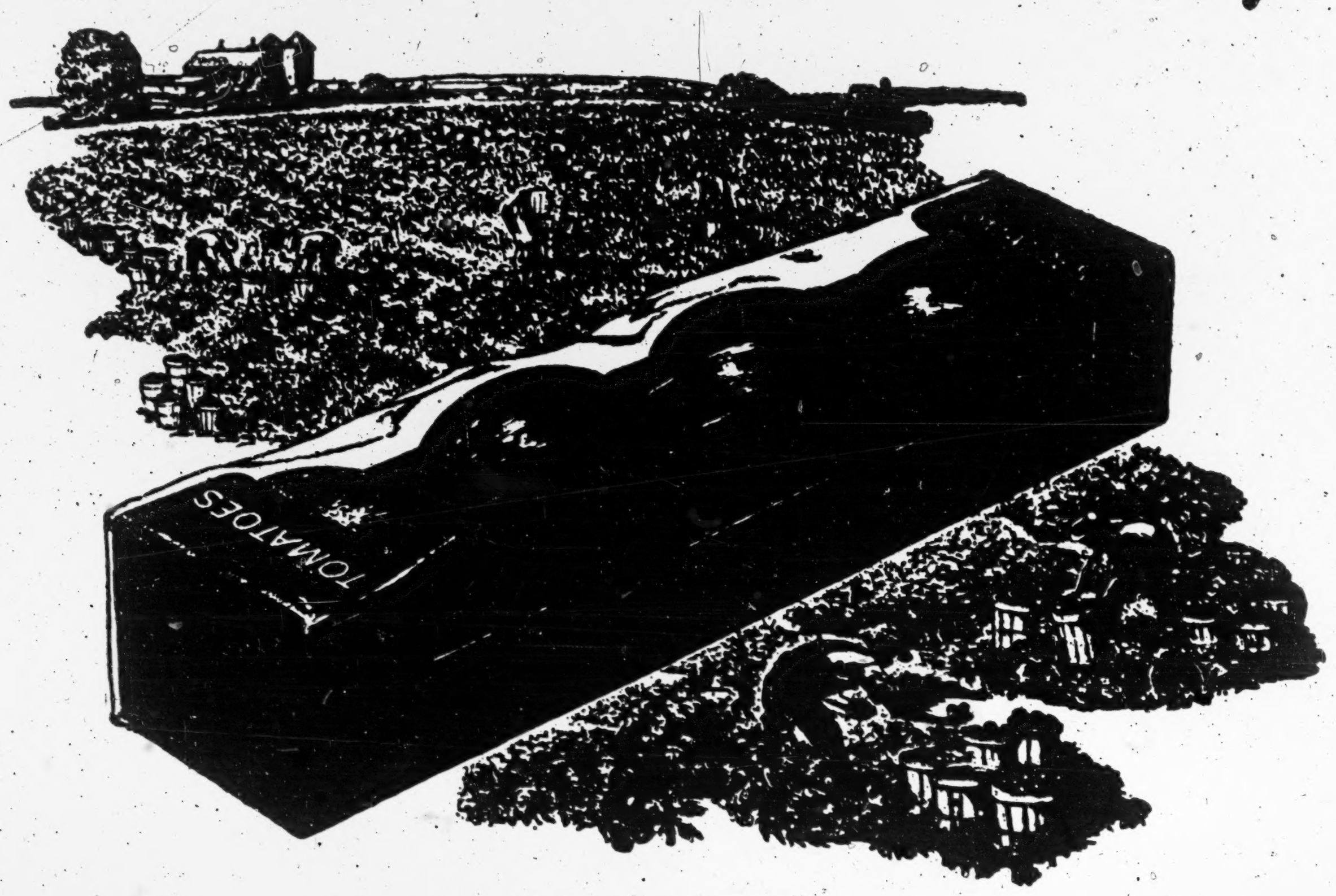
✓ Defendant's Exhibit No. 136

Out of Celanese creative chemistry—



modern packaging for America's fresh fruit and vegetable crops

One of the largest and fastest growing divisions of the country's biggest industry—the multi-billion dollar food industry—is the production of fresh fruits and vegetables. The farm value of fresh fruits and vegetables—not counting the quantities canned and processed, was over $1,300,000,000 in 1944, according to the latest estimate of the U. S. Department of Agriculture. Shipments in 1945 by boat, express and freight alone amounted to over 400,000 carloads. These huge totals exclude such staple crops as grains, potatoes and citrus fruits, and include only those types of fresh produce particularly adaptable for pre-packaging in transparent wrappings.

Produce growers, shippers, and receivers increasingly are adopting modern pre-packaging. Vegetables are trimmed, washed and wrapped, ready for the housewife to use. Fruits and berries are protected by a transparent wrap that reduces waste, handling and spoilage. Chain stores and growers have made exhaustive tests of pre-packaging—and the transparent packaging material that has been proved ideal is Lumarith®, the cellulose acetate plastic film pioneered by Celanese Corporation of America.

The Lumarith transparent wrap remains crisp when wet. It is non-fogging and retains its crystal transparency in the presence of moisture. It is water-proof, but at the same time permits the passage of oxygen and carbon dioxide. This important property allows vegetables and fruits to "breathe"—maintains natural succulence and freshness.

Through research and field tests, Celanese has cooperated closely with the food industry in developing modern methods of packaging. To help meet industry demands for packaging materials, Celanese is increasing current production of Lumarith films—with long range plans for still further expanded production. Celanese Corporation of America, 180 Madison Avenue, New York 16, N. Y. ®Reg. U. S. Pat. Off.

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Celanese®

CHEMICALS . . . TEXTILES AND PL

M 5310

Defendant's Exhibit No. 137

MP TECHNICAL
ENGINEERING • METHODS • TESTING
Charles A. Southwick Jr. • Technical Editor

PRODUCE-FILM COMPARISONS

Government tests on packaged produce yield data on the quality-preservation characteristics of various transparent films.

By J. KAUFMAN, B. A. FRIEDMAN and H. W. HRUSCHKA*

In carrying out a project of the Research and Marketing Administration entitled "Quality Preservation in Pre-Packaged Fruits and Vegetables," pre-packaging tests with broccoli, brussels sprouts and cauliflower were conducted at Riverhead, Long Island, N. Y., in the fall of 1947. The tests were made in cooperation with the Long Island Cauliflower Distributors and the Atlantic Commission Co. They were under the general supervision of James S. Wiant, Senior Pathologist, who assisted with the laboratory observations and with interpretation of the results. H. A. Schomer, physiologist, was a cooperator in the first test.

Various films for testing were supplied by the Celanese Plastics Corp., E. I. Du Pont de Nemours & Co., The Goodyear Tire & Rubber Co., and the Sylvania Division of American Viscose Corp.

Two tests were run. In the first one, on Oct. 15 and 16, freshly harvested broccoli, brussels sprouts and cauliflower were packaged. The master containers were held over night in a 42 deg. F. room and on the following day were hauled to New York City in a non-refrigerated truck. Commodity temperatures were 68 deg. F. at time of packaging and averaged approximately 55 deg. F. at time of arrival at New York.

In the second test the same three commodities were packaged on Nov. 12 and the packages placed in master containers that were held over night outdoors, in a closed automobile, and brought into New York on Nov. 13. Commodity temperatures were about 54 deg. F. at the time of packaging and averaged approximately 50 deg. F. at the time of arrival at New York.

Open-top chipboard trays of 1-lb. capacity were used for broccoli and brussels sprouts. These vegetables were overwrapped with sheets of film in the first test and placed in bags during the second test. All the packages were closed with hand heat sealers and an attempt was made to seal the packages gas tight. An adhesive was used in addition to heat in sealing the cellulose acetate film. Cauliflower heads in both tests were packaged individually in bags. Films used were: (1) moistureproof cellophane (300 MSAT 86 in test No. 1 and 450 MSAT 86 in test No. 2); (2) MSAT as in (1) except that the film in each package was perforated with two holes $^{3}/_{16}$ in. in diameter; (3) semi-moistureproof cellophane (300 PBDS in test No. 1 and 300 LSAT in test No. 2); (4) cellulose acetate (100 CA in test No. 1 and 120 CA in test No. 2); (5) Pliofilm (120 NF in test No. 1 and 75 NF in test No. 2); (6) Pliofilm as in (5) except that the film in each package was perforated with two holes $^{3}/_{16}$ in. in diameter. CA film was solvent sealed; all others were heat sealed. Unwrapped checks constituted the seventh lot.

In each test each of the seven lots consisted of 10 replicate packages. The sealed packages were placed in unventilated master cartons of corrugated paper for transportation to New York City. All packages were weighed on arrival at the Market Pathology Laboratory there. Half of the packages were then placed in a 67-deg. F. room, from which two packages of each lot were removed after two days and three packages after four days. The other five packages of each lot were placed in a 42-deg. room from which two packages were removed after five days, two packages after eight days and one package after 11 days.

At the time of removal from the storage rooms all packages were reweighed and complete observations were made on the appearance of each package, the film and the commodity before the package was opened,

* Assistant Pathologist, Associate Pathologist and Assistant Physiologist, respectively, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration, U. S. Dept. of Agriculture.

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and on the presence of mold or decay, freshness, color, odor and flavor (both raw and cooked) of the produce after the package was opened. Determinations of carbon dioxide in the atmosphere within the closed containers were made in the first tests and of both carbon dioxide and oxygen in the second tests. Estimates were also made at the time of each examination as to whether or not the produce in each package was salable without price discount.

Although the consumer must choose fresh fruit and vegetables largely by their appearance, continued acceptance of any type or brand of produce depends upon its quality. Retailers must offer high quality as well as attractive appearance in pre-packaged produce if pre-packaging is to succeed. The bases for judging salability in these tests were the appearance of package and produce and its quality as determined by organoleptic tests.

Although the two tests are not entirely comparable in all respects, the results obtained from both are discussed together.

Results with broccoli

Held at 67 deg. F. The unwrapped (check) broccoli which was held for two days suffered heavy loss in weight, was wilted and yellowed and therefore completely unsalable at the end of that period. That enclosed in CA—which in one test showed rather high weight loss and slight wilting and yellowing—still remained salable for two days. In both tests the broccoli enclosed in CA was either unsalable or only barely salable after four days because of wilting and yellowing.

Broccoli enclosed in perforated MSAT or in perforated Pliofilm, although showing only slight weight loss, became unsalable after two days because of some yellowing in the packages.

The best results were obtained with non-perforated Pliofilm, MSAT, LSAT and PBDS. The broccoli in these packages remained fresh and green for the full four-day holding period. Flavor remained unimpaired for the two-day period. After four days at this temperature (67 deg. F.), however, a slightly sweetish flavor was noted in some packages of each type of film. This flavor was associated with a slight "off" odor, which was barely detectable but which reduced salability of the packages.

Held at 42 deg. F. Yellowing and wilting of the broccoli in most of the check (unwrapped) packages made it unsalable after five days. This was associated with heavy loss in weight.

In the first test broccoli in some packages with perforated Pliofilm or perforated MSAT was only barely salable after five days at 42 deg. because of yellowing of buds; in the second test the broccoli in these packages held up well for five days, but was unsalable or only barely salable after eight days because of yellowing.

TABLE I—FILMS USED ON BROCCOLI

(Loss in weight and gas analyses of pre-packaged broccoli after 2 and 4 days at 67° F. and 5 and 8 days at 42° F.)

		At 67° F.						*At 42° F.*					
		2 days			*4 days*			*5 days*			*8 days*		
Film	*Test No.*	*Weight loss, %*	*Carbon dioxide, %*	*Oxygen,* %*	*Weight loss, %*	*Carbon dioxide, %*	*Oxygen, %*	*Weight loss, %*	*Carbon dioxide, %*	*Oxygen, %*	*Weight loss, %*	*Carbon dioxide, %*	*Oxygen, %*
MSAT cellophane	1	1.5	12.8	..	0.6	16.8	..	0.6	6.0	..	1.4	5.2	..
			13.2	..		13.4	..		6.0	..			
MSAT	2	0.6	17.0	..	1.0	11.4	9.4	0.4	3.0	15.8	0.7	8.0	14.0
			7.0	..		13.0	7.0		8.6	12.4			
MSAT perforated	1	0.8	0.2	..	0.5	6.0	..	0.4	1.6	..	1.0	2.4	..
			0.2	..		1.2	..						
MSAT perforated	2	2.3	1.8	..	1.9	1.6	..	0.3	1.2	..	0.4	..	..
			1.4						0.6				
PBDS cellophane	1	1.1	8.4	..	1.4	10.0	..	1.4	4.4	..	2.5	5.6	..
			7.2						5.4	..			
LSAT cellophane	2	4.6	7.8	..	5.9	6.6	11.6	2.1	4.4	..	3.3	7.2	12.4
			9.5	16.8					4.6	14.2			
CA acetate	1	3.5	6.8	..	8.1	7.2	..	6.5	1.2	..	9.7	2.4	..
			8.0						0.4	..			
CA acetate	2	8.8	4.3	..	10.1	3.4	..	4.7	5.4	..	8.1	4.8	14.8
			4.8	16.3		6.2	12.4		2.4	19.4			
Pliofilm	1	0.1	13.8	..	0.1	10.8	..	0.8	6.4	..	0.7	6.8	..
			15.2						3.6	..			
Pliofilm	2	1.0	10.3	9.7	1.2	15.6	2.0	0.2	15.9	6.0	0.3	11.4	8.6
									12.0	9.6			
Pliofilm perforated	1	0.4	4.8	..	0.5	4.8	..	0.6	1.2	..	0.9	1.6	..
			2.2	..									
Pliofilm perforated	2	2.7	1.5	..	2.0	0.8	..	0.7	1.7	..	0.9	..	..
			1.8						0.8	..			
Check (unwrapped)	1	11.3	..	..	15.3	..	..	9.9	..	..	18.5	..	..
Check (unwrapped)	2	23.5	..	..	21.8	..	..	10.6	..	..	16.4	..	..

* The carbon dioxide and the adjacent oxygen readings were made from analysis of the same gas sample.

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TABLE II—FILMS USED ON BRUSSELS SPROUTS

(Loss in weight and gas analyses of pre-packaged brussels sprouts after 2 and 4 days at 67° F. and 5 and 8 days at 42° F.)

Film	Test No.	At 67° F. 2 days Weight loss, %	Carbon dioxide, %	Oxygen,* %	At 67° F. 4 days Weight loss, %	Carbon dioxide, %	Oxygen, %	At 42° F. 5 days Weight loss, %	Carbon dioxide, %	Oxygen, %	At 42° F. 8 days Weight loss, %	Carbon dioxide, %	Oxygen, %
MSAT cellophane	1	0.5	32.8	..	0.9	22.4	..	0.8	11.6	..	1.0	7.4	..
			28.6	..					4.8	..			
MSAT	2	1.0	6.3	13.5	1.7	12.2	6.0	0.5	7.8	12.2	1.3	7.6	12.0
			14.8	5.2		11.6	7.0		7.8	14.2			
MSAT perforated	1	0.4	2.4	..	1.8	..	..	2.2	1.0	..	0.7	..	..
MSAT perforated	2	0.5	1.3	..	1.4	1.2	..	0.4	1.2	..	1.2	2.4	..
			5.6	..									
PBDS cellophane	1	0.7	12.0	..	1.7	18.0	..	0.9	10.4	..	1.5	7.6	..
			26.0	..					11.2	..			
LSAT cellophane	2	1.7	5.0	..	2.9	9.8	..	2.8	4.2	..	2.5	6.6	11.8
			9.0	11.2		10.4	8.6		6.2	13.2			
CA acetate	1	2.8	6.0	..	6.2	..	..	5.7	3.2	..	7.5	..	..
			2.8	..					1.2	..			
CA acetate	2	3.6	1.0	19.0	6.3	0.8	..	4.6	2.0	17.8	6.2	4.6	16.4
			4.8	15.6		4.8	13.8						
Pliofilm	1	0.5	40.4	..	0.8	22.4	..	0.5	40.0	..	0.4	..	..
			13.2	..		35.2	..		12.4	..			
Pliofilm	2	0.6	38.8	5.8	0.7	60.2	0.4	0.7	40.0	..	0.4	32.4	1.0
			31.4	1.4					43.4	0.6		13.2	8.8
Pliofilm perforated	1	0.3	0.4	..	1.3	..	..	0.4	0.4	..	0.7	0.2	..
			1.2	..					1.3	..			
Pliofilm perforated	2	0.3	4.0	..	0.7	0.4	..	0.2	1.0	..	0.3	1.0	..
			0.8	..		2.4	..						
Check (unwrapped)	1	5.8	..	..	15.3	..	..	9.5	..	..	12.6	..	..
Check (unwrapped)	2	10.5	..	..	17.5	..	..	10.1	..	..	13.9	..	..

* The carbon dioxide and the adjacent oxygen readings were made from analysis of the same gas sample.

Broccoli enclosed in CA held up well for five days in both tests, although rather high loss in weight was noted. When held for eight days most CA packages were unsalable because of yellowing and wilting.

In both tests broccoli enclosed in Pliofilm, MSAT, LSAT or PBDS was fresh and green when examined after each of the three holding periods; namely, five, eight and 11 days. No impairment of flavor was noted from the use of these non-perforated films in the second test. In the first test a slight sweetish flavor was evident in the broccoli held eight days and 11 days. Some observers thought the sweetish flavor was sufficiently objectionable to make the broccoli unsalable; others considered it entirely acceptable. However, any departure from the normal flavor probably should be considered undesirable and might reduce the salability of later offerings of the same brand.

The two figures given for each film under carbon dioxide in Table I show the results of analyses of atmosphere from duplicate packages. In some instances there is wide variation in the carbon dioxide content between duplicates, which indicates differences in gas tightness obtained in the heat-sealing operation. Only occasional oxygen determinations were made.

Results with brussels sprouts

Held at 67 deg. F. In both tests some of the packages wrapped with MSAT, PBDS or Pliofilm showed—even after two days—high concentrations of carbon dioxide and low concentrations of oxygen. The sprouts were inedible and unsalable because of odors and flavors of suboxidation. No evidence of suboxidation was found with LSAT (used only in the second test) nor was any found with CA.

At the two-day examination the sprouts enclosed in perforated MSAT or perforated Pliofilm were fresher in appearance than those enclosed in CA, while the checks had the least desirable appearance. There was a marked correlation between undesirable appearance and loss in weight. With the exception of a single Pliofilm package which in one test was unsalable on account of yellowing and decay, all the perforated and the CA packages were still salable at that time and decay was of practically no importance.

None of the films prevented the sprouts from reaching an unsalable condition after four days at this high temperature.

Held at 42 deg. F. The sprouts in the unwrapped (check) packages were unsalable after five days because of shriveling and yellowing of the leaves. This was associated with marked loss in weight of the packages after both five days and eight days.

Enclosing the sprouts in CA reduced loss in weight to about half of that noted in the checks and maintained the sprouts in a salable condition for five days. Sprouts held for eight days enclosed in CA were only barely salable because of leaf shriveling and yellowing.

Perforated MSAT and perforated Pliofilm reduced

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TABLE III—FILMS USED IN CAULIFLOWER

(Loss in weight and gas analyses of pre-packaged cauliflower after 2 and 4 days at 67° F. and 5 and 8 days at 42° F.)

Film	Test No.	At 67° F. — 2 days: Weight loss, %	2 days: Carbon dioxide, %	2 days: Oxygen,* %	At 67° F. — 4 days: Weight loss, %	4 days: Carbon dioxide, %	4 days: Oxygen, %	At 42° F. — 5 days: Weight loss, %	5 days: Carbon dioxide, %	5 days: Oxygen, %	At 42° F. — 8 days: Weight loss, %	8 days: Carbon dioxide, %	8 days: Oxygen, %
MSAT cellophane	1	0.5	28.0	..	1.0	..	..	0.8	2.6	..	1.3	2.8	..
			11.2	..					4.0	..			
MSAT	2	0.9	4.0	..	1.5	11.0	8.8	0.5	7.2	14.2	0.6	7.2	16.2
			11.6	..		7.6	12.8		6.6	..			
MSAT ~~perforated~~	1	0.8	0.2	..	1.6	0.0	..	0.6	..	..	1.4	0.0	..
			0.2	..									
MSAT perforated	2	0.7	0.4	..	1.4	0.6	..	0.5	0.4	..	0.7	0.8	..
PBDS cellophane	1	1.0	4.4	..	2.3	1.6	..	0.9	6.8	..	2.3	4.0	..
			4.0	..					3.2	..			
LSAT cellophane	2	1.5	6.8	..	2.8	2.0	..	1.0	3.7	15.5	1.8	2.2	17.2
			8.0	..		3.4	17.2		2.5	..		4.6	15.4
CA acetate	1	3.0	0.0	..	5.1	1.2	..	4.3	0.2	..	6.8	..	..
			6.0	..		1.2	..		0.0	..			
CA acetate	2	4.1	1.6	..	7.2	0.2	19.6	3.2	..	..	4.7	..	..
Pliofilm	1	0.4	44.0	..	0.8	44.8	..	0.6	44.8	..	1.2	11.4	..
			62.8	..					54.8	..			
Pliofilm	2	0.4	43.2	..	0.7	60.2	..	0.2	46.2	0.6	0.4	26.8	4.2
			39.6	..		28.6	2.0		16.6	..		44.6	2.0
Pliofilm perforated	1	0.5	3.2	..	0.4	0.6	..	0.2	0.0	..	0.5	2.8	..
			1.2	..									
Pliofilm perforated	2	0.7	0.4	..	0.9	1.6	..	0.2	1.6	..	0.4	1.4	..
			4.0	..		0.2	..						
Check (unwrapped)	1	4.5	..	..	8.5	..	..	7.7	..	..	17.5	..	..
	2	12.7	..	..	21.1	..	..	8.2	..	..	11.5	..	..

* The carbon dioxide and the adjacent oxygen readings were made from analysis of the same gas sample.

moisture loss to a great extent and maintained the sprouts in salable condition for five days. Yellowing of leaves or development of bacterial soft rot, or both, made some packages enclosed with each of the two perforated films unsalable after eight days.

Non-perforated Pliofilm caused suboxidation in some packages held five days at this temperature. This was evidenced by the development of abnormal odors and flavors and by the low concentrations of oxygen and the high concentrations of carbon dioxide in the atmosphere within the package.

Non-perforated MSAT, PBDS and LSAT maintained the sprouts in salable condition for eight days; in fact, even after an 11-day holding period they were still salable. From the data in Table II it may be noted that the oxygen concentration within these packages was 12% and the carbon dioxide concentration only 12%.

Readings of oxygen and carbon dioxide concentration made in the MSAT and LSAT packages held 11 days, although not shown in the table, were essentially the same as those determined after having been held for eight days.

Results with cauliflower

Held at 67 deg. F. The unwrapped (check) heads in Test 1 retained their fresh appearance and were entirely salable at the end of both two-day and four-day holding periods. In the other test they were not salable beyond the two-day period because of a wilted appearance associated with heavy loss in weight.

Although there was somewhat greater loss in weight in CA bags then in either perforated MSAT or perforated Pliofilm, there was actually little difference in appearance among the three. The cauliflower remained fresh in appearance and salable in all three films through the four-day holding period.

Some evidence of suboxidation was noted in some of the heads enclosed in MSAT, PBDS and LSAT. This was associated with a moderate reduction in oxygen content of the atmosphere within the packages and with a moderate accumulation of carbon dioxide gases.

Heads enclosed in Pliofilm uniformly developed strong odors and strong flavors of suboxidation that made the cauliflower inedible. Accumulation of carbon dioxide within the packages was very great and the oxygen content, where determined, was very low.

Held at 42 deg. F. The unwrapped heads lost weight rapidly in both tests. Although somewhat wilted, they were salable after both the five-day and the eight-day holding periods in one test (No. 1); in the other test they were barely salable after five days and unsalable after eight days because of the wilted appearance of the cauliflower.

Although moderate loss in weight occurred in heads enclosed in CA, all remained salable through both the five-day and the eight-day holding periods.

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Heads enclosed in Pliofilm developed markedly objectionable odors and flavors indicative of suboxidation after a five-day holding period. It will be seen from Table III that the oxygen content of the enclosed atmosphere was very low and the carbon dioxide concentration very great.

Cauliflower heads enclosed in MSAT, PBDS or LSAT showed no evidence of suboxidation and were salable even after eight days. However, equally favorable results, as indicated by low loss in weight and retention of fresh appearance, were obtained with both perforated Pliofilm and perforated MSAT.

Comparative behavior of films tested

From the data presented above under results for the several commodities, certain facts stand out rather conspicuously.

Thus, marked differences were noted in protection of the commodity from moisture loss. Loss in weight was lowest in produce enclosed in non-perforated Pliofilm or in non-perforated MSAT cellophane. Perforating these two films had little effect in increasing moisture loss.

Although direct comparisons were not made between the two semi-moistureproof cellophane, PBDS and LSAT, it will be noted from their relative behavior in comparison with the other films that much less loss in weight occurred with the former. Of all films tested, the greatest loss in weight occurred with CA; for the most part this was reflected in the more rapid visible drying out of the produce.

The films differed considerably in their physiological effect on the packaged produce. Non-perforated Pliofilm had the most conspicuous effect, followed by non-perforated MSAT, PBDS, and LSAT, in the order named.

All four of the non-perforated films slowed up the transfer of oxygen through the films, so that, as the produce respired, the oxygen content of the enclosed atmosphere became reduced, the carbon dioxide content increased considerably and disagreeable odors and flavors of suboxidation became apparent. This deleterious effect was most evident with cauliflower and least evident with broccoli. It was more pronounced at 67 deg. F. than at 42 deg. It should be pointed out that although care was taken to seal completely the films, the data in Tables I to III suggest that actually some of the packages were not tightly sealed at the time gas analyses were made.

It should also be pointed out that from other unpublished tests it has been found that machine-sealed packages vary greatly in the gas tightness of the seal, with high percentages of the packages remaining incompletely sealed.

Up to a certain point there was a beneficial effect on broccoli from enclosing it in the four non-perforated films. This was reflected in the green appearance and longer period of salability of the broccoli. Where MSAT and Pliofilm were perforated, there was a tendency for yellowing of the broccoli and for a reduction in the period of salability on account of poor appearance.

On the other hand, the development of slightly sweetish flavors and the slight trace of flavors of suboxidation noted by some observers suggest that broccoli should not be packed in gas-tight packages without some ventilation.

There was no evidence of suboxidation with perforated Pliofilm, perforated MSAT and non-perforated CA. In general, the period of salability was greater with the first two films than with CA because of their effect in reducing drying out of the produce.

Very little decay developed in any of the commodities tested, so that no information was obtained on the effect of films on prevalence of decay.

Commercial considerations

Although the tests were limited in scope, they do indicate that Long Island-grown broccoli, brussels sprouts and cauliflower can be successfully pre-packaged at time of harvest and held for a reasonable marketing period.

The salable period at from 65 to 70 deg. F. is approximately 48 hours and it becomes longer with progressively lower temperatures. The results clearly show the importance of low temperatures in prolonging the market life of pre-packaged produce. Although no experimental work is here reported on pre-cooling, the results of the present test suggest the advisability of lowering the commodity temperatures as quickly as possible and of maintaining low temperatures during the transit and marketing period.

Appearance of films tested

In all tests CA was the clearest of all films and gave the best view of the packaged produce.

Throughout the tests the three cellophane films, MSAT, PBDS and LSAT, showed some "fogging" caused by the condensation of numerous, tiny droplets of moisture on the inner surface of the film. This occurred in both the 67-deg. F. room and the 42-deg. room. It was more pronounced in the 42-deg. room and was more conspicuous on MSAT (both non-perforated and perforated) than on either of the other two films.

After exposure to laboratory temperatures (70 to 75 deg.) there was a tendency for the droplets to run together to form large drops, many of which fell onto the produce and as a consequence the "fogged" appearance cleared.

The degree of fogging varied considerably. Although the produce was somewhat less visible when fogging occurred, most observers thought that it had little effect on the consumer appeal of the packages.

No fogging occurred on Pliofilm, although large drops of condensed moisture were occasionally noted in some packages. In both tests the Pliofilm had a slight cloudy or smoky appearance that made the produce less clearly visible. Most observers considered this to be a defect of only minor importance.

M 5311

(298) p. 4453.

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
G. FAVA FRUIT COMPANY	T. O. TAYLOR	4/23/48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
13 E. Pratt Street,	8/18/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Baltimore, Maryland.	1-12	Produce

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	Celanese	Direct	CA	3,000	3,000	3,000	

REPORT CAL BELOW

SEE REVERSE SI FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE
Andrew Fava	G.M.	X		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
9-21-48 [illegible]				
10-15-48 [illegible]				
TOTAL				

RETURN TO "CELLOPHANE" TRADE ANALYSIS

HANDLED 8/26/48

1. Future.

2. Did not take August allocation since we sold DiPaula & Company (nephew) direct for first time. Fava has been using ~~XX~~ only Lumarith.

Asked about supply duPont Acetate and was advised of situation. Will want allocation soon as available. Will no longer want Cellophane.

3. Discussed relative merits Acetate and Cellophane. Says even with LST he gets some condensation inside package which doesn't get with Acetate. Says clarity and stiffness of Acetate worth price. Suggested tests and #450 gauge Cellophane. Unwilling to consider Cellophane at all at present. Will work further on #450 tests.

Discussed printing. Says he has greatly increased sales by using no printed Cellophane or Acetate. Can't meet Safeway Stores' demands.

Is buying a third Package machine and opening second prepackaging location.

5. (B) N. F. WENDLER: Customer wants 500 lbs. 100 CA. soon as possible.

6 23 1948 M 5076

R-12727 REV. 11-47 * R ROLLS S SHEETS C CONVERTED

Defendant's Exhibit No. 409

(297) p. 4452

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
THE DALLES COOP GROWERS.	C. C. MOORE, JR.	5-12-44

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
Foot of Madison St.	7-22-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
The Dalles, Oregon.	2-6	Fd. Uncl.

~~Se Hent~~ ~~Dr of Jobs~~
~~W G Hunter~~
ML ~~Drew~~

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	.0	Goodyear		Pliofilm	--Test	negligible	--	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
A. M. Phillips	G.M.	x	M-S	X
Mrs. Grace Tibbets	Asst to G.M.			

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Brined cherries	0			
Glace Cherries	0	Depends on development and public acceptance.		
TOTAL				

JUL 28 1948 ML

1.a- Account knowledge.
b- 1948 plans.
c- Cellophane needs.

2 a-b-c- Plans to use pliofilm on cherries because experiments thus far have proven Cellophane inadequate - leakage and attack by citric acid on cherries (which he thinks causes embrittlement of Cellophane)
Would prefer Cellophane because of handling and cost and will cooperate in any tests we may set up
Tried bags 8 oz. and tubes (5-6 cherries) for small consumer candy counter pack.
Got some large bags (33" x 18½" fin seal - sample end) from Hudson-Duncan Co. left over from packing apricots (frozen) - Cellophane type unknown - He used these for packing 25# cartons (bags as interliner for carton) of cherries and they worked ok.
Can use about 8M of converted bags for 25# carton liner conservative estimate.
Thinks Robinson - former mgr who conducted test - used MSAT-83 or 87. Milprint cooperated on original test.

4 Old address 521 East 1st. St.
Chge to: Foot of Madison St.
Old M.L. V. B. Robinson G.M.
Chge to: A. M. Phillips G.M.
Mrs. Grace Tibbets.

M 5312

R-1272—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

Defendant's Exhibit No. 138

DU PONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
THOMAS COLACE COMPANY	J. S. TAYLOR	5/19/49

ST. AND NO.	DATE	CONTROLLED BY
152 Dock St.	11/1/49	PURCHASING AUTHORITY

CITY-ZONE-STATE	CLASS	INDUSTRY
Philadelphia, Penna.	1-4	Fr. Prod.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	Sylvania	Crystal	LST	4M	2M	0	1M
Shellmar	1M	Celanese	Shellmar	CA	0	2M	0	3M
Crystal	1M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. C. CHGE
Vincent Colace	Prop.	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. (a) Urge specification du Pont LST.
   (b) Check results of trial sample roll LST furnished previously.

2. (a) Has ordered 3M lbs. Lumarith through Shellmar for top quality pack. Will specify du Pont LST for use on 50% of production.

   (b) Subject reports wrapped sample units - "pinks" and "greens" in Lumarith and new LST. Lumarith showed superior characteristics all respects - fogging, ripening and taste of tomatoes, and appearance of film.

   We again stressed cost angle and pointed out need for perforating regardless of type packaging material. Pointed out performance of CA and perforated LST very similar. Subject says feels acetate provides greater assurance of quality product for his quality accounts.

3. Showed Consumer ad #10-49 as evidence of du Pont support to repackers. Subject agreed very helpful. Cannot use reprints.

M 5077

Defendant's Exhibit No. 141

(299 p. 4454

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL ☐

CUSTOMER		SALESMAN	DATE LAST REPORT
hw	MAIORANO & RAGGIO	J. S. TAYLOR	10/13/48
ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY	
	232 South Second St. 12/7/48		
CITY-ZONE-STATE	CLASS	INDUSTRY	
	Philadelphia, Penna. 2-6	Fresh Prod.	

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	Celanese	Shellmar	CA	0	0	0	1M
Catty	3M		Catty	CA	0	0	0	1M
Diaphane	1M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
L. Maiorano	Part.	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-12727-1-A

* R-ROLLS S-SHEETS C-CONVERTED

1. Investigate rumors re use of "Lumarith" CA.

2. Have decided to try printed cellulose acetate. Buying from Catty and Shellmar approximately 50% of requirements. Price approximately $1.30/lb.

3. This concern convinced that acetate provides better appearance and allows natural ripening, hence better taste.

They are not sure they can absorb extra cost but will weigh this factor in terms of consumer and trade acceptance.

Mr. Maiorano stated that Celanese has agreed to deduct 5¢ per pound from cost of "Lumarith" until necessary machine attachments (glue pots and static eliminator) are paid for.

M 5079

Defendant's Exhibit No. 140

P.4456 (301)

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: J. J. Beaton Company

SALESMAN: C. A. Quinlan

DATE LAST REPORT: 9/15/49

ST. AND NO.

DATE: 11/7/49

CONTROLLED BY PURCHASING AUTHORITY

CITY-ZONE-STATE: Wareham, Mass.

CLASS: 1-6

INDUSTRY: Fr. Produce

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT MT CA ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR PUR
DU PONT	0		0					
Munson	0							
Dobeckmun	0							
Stone & Forsythe	15							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS Nashua 2M

	TITLE	INT VD	MAIL TO	M L CHGE
M. C. Beaton	G.M.	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S	ANNUAL POTENTIAL

TOTAL

R-12727 A R-ROLLS S-SHEETS C-CONVERTED

1. General performance of LSAT this year.

2. Generally fine. Has had some complaints of limp feeling film when bags come out of old storage. How serious, this is rather hardto decide now. Said there is feeling along brokers that this condition is disliked by women customers primarily due to damp, soggy feel.

3. Has used 300,000 window boxes due to demand of certain customers. Has another 450,000 on order. Requests are coming primarily from West Coast and around Pittsburg and Phila. areas. Believe American stores has made request for w. b. This demand is in face of 15 cent upcharge per case over all Cellophane. Claims both Container Corp. and Stone-Forsythe have offered to make carton equal in price to a 450 LSAT bag - if they order in million lots.

Pliofilm also soliciting business with perforated bag and story of better feel on moist products.

Bag machine from Roto working O.K. now.

M 5315

Defendant's Exhibit No. 142

P.4457 (302)

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: J. J. Beaton Company

SALESMAN: C. A. Quinlan

DATE LAST REPORT: 11/7/49

ST. AND NO.

DATE: 5/15/50

CONTROLLED BY PURCHASING AUTHORITY

CITY-ZONE-STATE: Wareham, Mass.

CLASS: 1-6

INDUSTRY: Fr. Produce

ML Boston

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THRU	PT MT CA ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR PUR
DU PONT	0							
Munson	0			0				
Dobeckmun	0							
Stone & Forsythe	0							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS Nashua

	TITLE	INT VD	MAIL TO	M L CHGE
M. C. Beaton	G. M.	X	M-S	X

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
Fresh Cranberries (Seasonal)		300 & 450 LSAT	C	35M Window Box

RETURN TO "CELLOPHANE" TRADE ANALYST

7727—REV. 2-47

1. Plans for 1950 crop.

2. Have placed orders to date with three converters for LSAT roll stock for use on Roto bag machine. Total 13M lbs. This combined with the 5M lbs. left from 1949 will give them good start for this season.

Have also placed orders for window boxes totalling one million boxes.

Beaton not positive the demand for window boxes will equal 1949, but wants to be prepared. Prices on boxes comparable to 450 LSAT bags.

They are not anxious to push the W. B. due to extra labor involved in filling and closing; however, will fill on request.

3. Thinking of purchasing a Simplex machine for added bag production. Also putting in 2 more Holm fillers giving total of 8 filling stations. Discussed Polythene as possibility for future should tests prove it adequate for job.

M 5316

Defendant's Exhibit No. 143

Defendant's Exhibit No. 144

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

RAYON DEPARTMENT
CELLOPHANE DIVISION

November 18, 1949

MATTY CALLENDER

SUBJECT: CRANBERRY INDUSTRY

REF: TREND TO WINDOW BOXES

As you requested, I visited five cranberry accounts today to get more information regarding their increased use of window boxes versus Cellophane bag.

I. *Beaton's Distributing Agency - Wareham, Mass.

Approximate use in 1949 - 750,000 boxes from Stone & Forsythe. Window box salesmen are pointing out advantages as follows:

a) Cost - Eliminate need of heat seal closure.

b) Strength - Can be stacked in stores.

c) C. A. Window and perforated carton reduces tendency toward fogging and condensation.

d) Claim customers dislike the "feel" of Cellophane when it has absorbed too much moisture.

e) Speed of filling versus bags is not too far off due to elimination of sealing operation.

Beaton gave me list of his best brokers including all who have specified window boxes either 100% or partially.

*Independent operator.

II. A. D. Makepeace Co., Wareham, Mass.

Not able to supply brokers' list because under new council set-up this year, all sales and directives are issued from American Cranberry Exchange, N. Y. C. Referred us to them for this information.

So far have used approximately 200,000 window boxes. Have another 150,000 on order.

M 5318

Generally speaking, are not too happy using the boxes, but are following through on requests from customers.

Agreed that "feel" of Cellophane bags in many instances - reason for swing to window boxes.

Most all shipments of W.B. have been made to California. Last ten days has seen some large requests from New York area.

III. New England Cranberry Sales Co., Middleboro, Mass.

Could not get to see Mr. Benson. Left note concerning brokers' list and will call him for answer as to whether he can help out or not.

IV. National Cranberry Association, Hanson, Mass.

Same answer as Makepeace gave us; i. e. we shall have to contact American Cranberry Exchange, New York City.

However, Bailey claims have used only a few W.B. to date, but have substantial quantity on order.

Bailey of opinion that store managers put berries in cold holding chest when weather is warm (such as this year) in order to prolong life of berry. Then when they take from cooler, they notice the damp, limp feel of Cellophane. This condition not noticeable with W. B. to same extent.

- - - - - - - - -

Some Pertinent Facts

1. Now paying $15.00 per M for 3 color 1 lb. window boxes. CA window.

2. a) A case of berries in W. B. selling for about $3.65 (24# to a case).

   b) A case of berries in 300 LSAT selling for approximately $3.50 per case.

   c) Bulk berries sell at $3.25 per case.

M 5318.

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

RAYON DEPARTMENT
CELLOPHANE DIVISION

3. The store so far are paying a premium of 15 cents a case for W. B. or .00625 per lb.

4. Both Container Corp. and Stone and Forsythe have offered to meet the Cellophane bag cost, if packers purchase in 500,000 to 1,000,000 lots at a time.

It should be remembered that this year is abnormal for fresh berries. They are being promoted by every means possible. The packers shipped very early this year - Sept. 1st - then came about 7 weeks of abnormally warm weather - this condition coupled with the fact that the early black variety of berry was below standard and had poor keeping qualities.

I have heard of complaints on bulk berries this year, primarily due to poor quality.

Attached is list of brokers from Beatons' Distributing Agency.

CAQ:RH C. A. Quinlan

Att.

M 5318

Defendant's Exhibit No. 145

EXPERIMENT # 659

February 28, 1936

O.F.Benz-C.F.Brown
T.L.Hines-J.E.Hatt-L.A.Yerke:
H.O.Thayer-W.L.Hyden
E.C.Lake
A.F.Wendler

RETURN TO
NEW YORK OFF

EVALUATION OF MOISTUREPROOF "CELLOPHANE" and FOIL BAGS FOR PACKAGING OF POTATO CHIPS

Du Pont Cellophane Company, Inc.
Sales Service Section
New York, N. Y.

M 5319

Du Pont Cellophane Company, Inc.
Sales Service Section
New York, N. Y.

SUBJECT

Evaluation of Moistureproof "Cellophane" and Foil Bags for Packaging of Potato Chips

OBJECT

To determine the protection afforded by foil and moistureproof Cellophane bags to potato chips.

SOURCE OF TEST MATERIAL

1. Bags made of Cellophane fabricated by the Debeckmun Company.
2. Foil bags fabricated at T. M. Royal Company.
3. Fresh potato chips secured direct from the Treat Company, Brooklyn, New York.

PROCEDURE

A. Description of Test Units

1. "Cellophane"

Single M.T.

Double M.T. outside, P.T. inside

Single M.R.C. amber

Single M.R.C. tango

2. Foil

"Lafer" - triplex - foil outside, paper inside

"Betsy Ross" - Glassine lined (standard potato chip bag)

"Gills" - foil inside, paper out.

B. Test Conditions

Direct sunlight six days.

M 5319

Test Conditions (Cont'd)

81, Sunlamp - three, six and nine hours

Normal daylight - 20 days

81% R.H. room temperature - fourteen days.

C. Test Analyses

Potato chips exposed to direct sunlight, S-1 sunlamp and normal daylight, examined periodically for degree of rancidity.

Percent gain in weight of potato chips exposed to high humidity determined at the end of seven and fourteen days.

DETAILS OF RESULTS

TABLE I

ODOR AND TASTE TESTS

Exposed to Direct Sunlight (1.5 to 3.9 milliamperes light intensity).

TIME IN HOURS	SINGLE M.T.	DOUBLE MT OUTSIDE PT INSIDE	SINGLE MRC AMBER	SINGLE MRC TANGO	FOIL LAFER	FOIL BETSY ROSS	FOIL OILLE
10	6	6	8	9	10	10	10
30	2	2	5	6	8	8	8

Exposed to S-1 Sunlamps (1.0 milliamperes light intensity)

TIME IN HOURS							
5	6	6	8	9	10	10	10
9	4	4	6	7	9	9	9
15	2	2	4	6	8	8	8

Exposed to Normal Daylight

TIME IN DAYS							
5	8	9	10	10	10	10	10
9	7	7	8	9	10	10	10
20	6	6	7	8	10	10	10

M 5319

KEY TO RATINGS

10 - Excellent
9 - Faint loss in flavor - oder O.K.
8 - Loss in flavor but not rancid
7 - Slight rancid flavor and oder
6 - Distinct rancid oder and flaver - inedible
5 - Pronounced rancidity
4 - Bad rancidity
2 - Very bad rancidity

TABLE II

AVERAGE PERCENT GAIN IN WEIGHT OF POTATO CHIPS EXPOSED TO 81% R.H. - ROOM TEMP.

TYPE OF BAG	TIME IN DAYS 7	TIME IN DAYS 14	CONDITION OF CHIPS 14 days
A. "Cellophane"			
Single - M.T.	2.0	3.6	Crisp
Double - M.T. outside, P.T. inside	0.9	1.2	Very crisp
Single - M.R.C. Amber	2.4	3.2	Crisp
Single - M.R.C. Tango	2.0	2.7	Crisp
		2.4	
B. Foil			
Lafer - triplex - foil outside	4.8	5.5	Soggy
Betsy Ross - Glassine Lined	2.5	3.6	Crisp
Gills - Foil inside	3.3	4.3	Sl. Soggy
		3.7	

A. Rancidity

It is evident from the above results (Table I) that:

1. Single or double M.T. "Cellophane" bags will allow potato chips to turn rancid in a very short period of time. (10 Hours direct sunlight, 9 days normal light).

M 5319

2. M.R.C. tango "Cellophane" bags will keep potato chips in a satisfactory salable condition for twenty days if exposed to only normal daylight.

3. Foil lined bags will keep potato chips in a satisfactory salable condition from a standpoint of rancidity only, regardless of the conditions to which the packages are exposed. (Normal daylight, 20 days; sunlight, 20 hours).

Both M.R.C. Amber and tango "Cellophane retard the formation of rancidity but do not give effective protection to potato chips when exposed to direct sunlight for 20 hours (6 day period).

B. Moisture Absorption

The potato chips in bags made of Cellophane and exposed to high humidity, kept in a satisfactory condition over a fourteen day period all being in a crisp condition at the end of this time. Only one type of foil bag (Betsy Ross - glassined lined - the standard bag for potato chips) showed moisturepro-f protection that could compare with that secured by the Cellophane. The chips in the other two types of foil bags were soggy. Examination of these bags showed many minute cracks and breaks in the metal foil largely due to fabrication of the bags themselves, as these breaks were more noticeable at the creases and corners than on the flat surfaces.

CONCLUSIONS

1. Foil bags lend excellent protection to potato chips

M 5319

in preventing rancidity regardless of conditions to which the packages are exposed. (20 days normal daylight, 30 hours sunlight).

2. M.R.C. tango "Cellophane" offers the best protection to potato chips in retarding rancidity of any transparent sheeting tested.

3. No potato chips in transparent bags should be exposed to direct sunlight.

4. Moistureproof "Cellophane" bags offer satisfactory protection to potato chips against absorption of moisture when exposed to high humidity for 14 days.

R. C. Schilly,
Sales Service Section.

APPROVED BY:
A. F. Wendler, Manager
Sales Service Section.

md

M 5319

Defendant's Exhibit No. 147

VED CHIPS

Dan Dee adopts a big Kodachromed carton

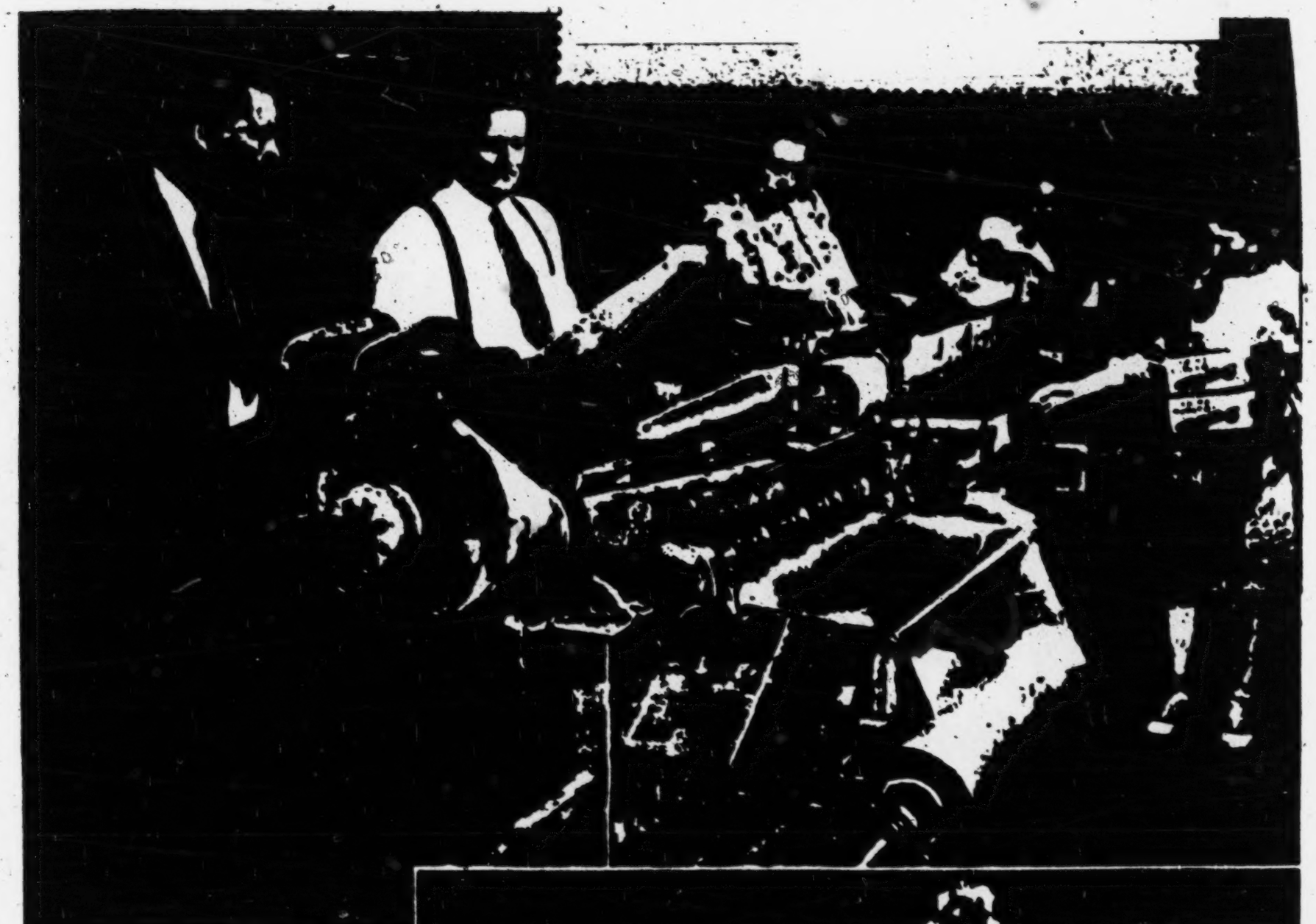
for potato chips and converts a machine

to apply a protective Pliofilm overwrap

The distribution of potato chips is usually confined to a relatively small area and is ordinarily characterized by short shelf life and quick turnover. But the Dan Dee Pretzel & Potato Chip Co., Cleveland, found their business expanding so rapidly and their territorial demand extending so widely that they had to provide for a longer shelf life. They turned to the package as a means of accomplishing that objective.

Traditionally, potato chips are distributed either from bulk containers in which the supply is daily replenished or in waxed or glassine paper bags containing a few ounces. In the one case, the Dan Dee people concluded, the modern sanitary principle was violated; in the other case the unit of sale was usually smaller than either producer or consumer desired. Besides, neither of these methods prevented breakage of the chips.

Experimentation and testing of various packaging materials and forms of packages, conducted for more than a year, convinced them that the most satisfactory solution was provided by a carton with an inner bag of

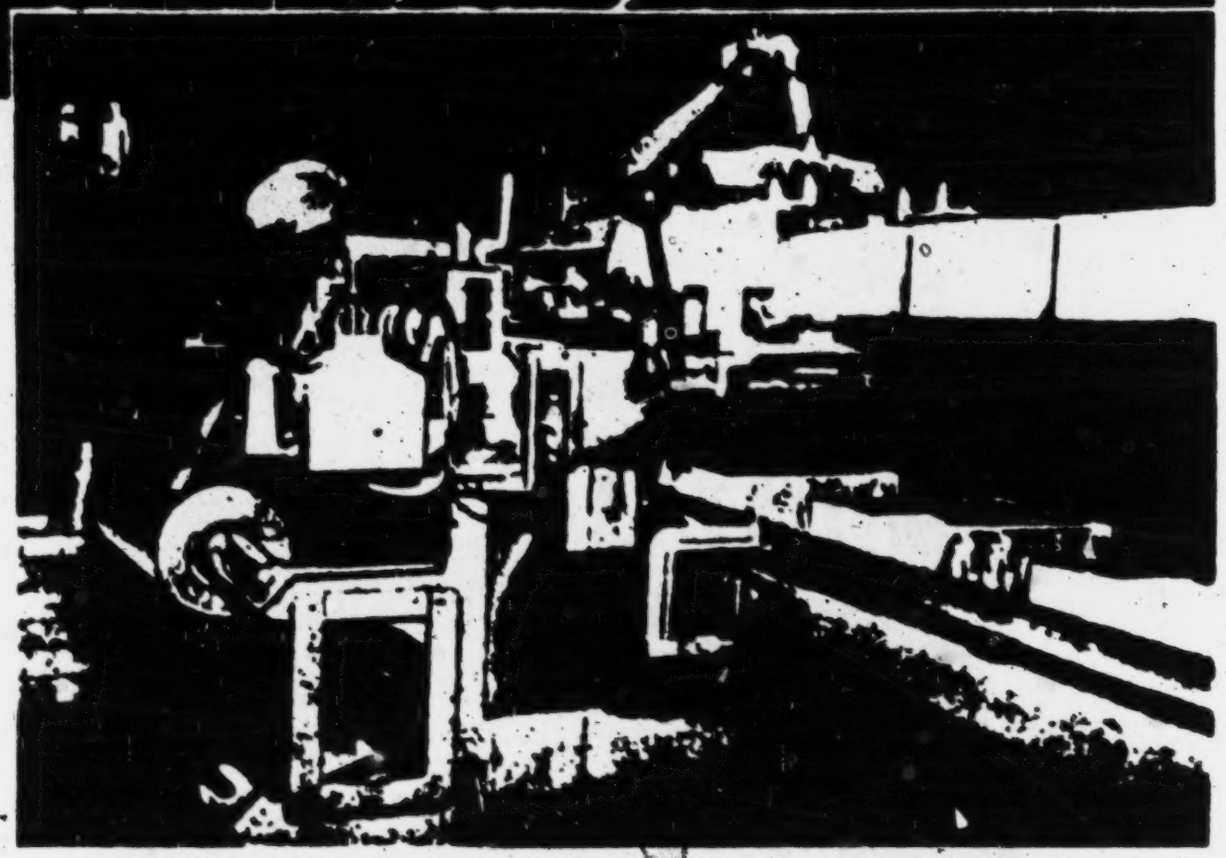


Hayssen machine, redesigned by Goodyear and Hayssen engineers, wraps and heat-seals cartons in Pliofilm (fed from roll at right) at speeds of from 30 to 40 per minute.

chips play an important role in entertainment.

On the back panel are four direct color shots illustrating suggested uses for appetizers, garnishes, with fish or in salads. One of the side panels illustrates summer sports, the other winter activities. The end panels are used for product and brand name identity. Few dealers would neglect the front or back panels for display purposes, but even if one did, the side and end panels would do a merchandising job, anyway.

Standard operations in the Dan Dee plant are perfectly adequate for filling and closing inner bag and carton, but the outer wrapping with rubber hydrochloride film called for considerable modification of their equipment. As yet, stock models of standard wrapping machines have not been developed that will handle this type of film on a package of this size at mass production speeds. Accordingly, the machine maker



Filled cartons enter machine on lower level (moving away from camera) and return on upper level, fully wrapped and ready for shipping cases.

it may vary, depending on the other conditions.

In converting the standard machine to handle rubber hydrochloride film, the stationary hot plates were removed and two side heater plates mounted on duplex oscillating arms to give a parallel motion were added. The bottom hot plate was removed and replaced with a plain unheated plate. Through a slot in this plate, a sealing bar operated from a bell crank was used to form the bottom seam while the package was stationary in the heat-sealing area. Side heaters and bottom heater bar alike were connected by means of a rod to a bell crank on the rear of the machine. This bell crank with its roller is operated from a new cam mounted on the main shaft of the machine and this cam moves the bottom and side sealing plates into the proper position, holding them there while the package is positioned.

As the roller moves off the "dwell" of the cam, a spring presses the side sealer plates and the lower sealer bar into the position for forming the weld. These parts remain in position until the next package is ready to be pushed into place. The heaters used are the same as on standard models of the machine and a standard Hart Thermoswitch controls the temperature of all three heating elements, but a hand rheostat of about 50 ohms resistance has been added to adjust the ratio of heat. By this means it is possible to "balance out" the circuit so that the temperature of the side heater plates is sufficient to penetrate the numerous folds of film which unavoidably occur on the top and bottom panels of the package, yet not high enough to cause the film to stick to the sealer.

The manufacturer of this machine, as well as the manufacturer of the film, foresee an attractive future for automatic machinery to handle this type of package. The film itself has demonstrated its moistureproof characteristics and some forms of it have selective gas permeability.

A number of machine makers are now working on the engineering problems of converting their standard models to handle this wrap at speeds that will make it commercially feasible though they are reluctant to hazard a guess as to possible delivery dates.

CREDITS: *Pliofilm, The Goodyear Tire & Rubber Co., Akron, Ohio. Carton, Milprint, Inc., Milwaukee, Wisc. Wrapping Machine. Hayssen Mfg. Co., Sheboygan, Wisc.*

PLIOFILM OVERWRAPPER FOR MEDICINE CARTON

Where a product has need for the water-vapor protection which a Pliofilm overwrap will provide, means of handling the rubber hydrochloride film on mechanical equipment will be found. A case in point is that of "Black-Draught," a powdered vegetable laxative manufactured by the Chattanooga Medicine Co., a product which may deteriorate in contact with moisture.

nooga engineers then converted the machine back to cellophane and used 150 MST for the following five war years. It was not until recently, when Pliofilm again became available, that the machine was reconverted to use Pliofilm once more. It is now in regular use.

CREDIT: *Machine by F. B. Redington Co., Chicago.*

Machine with rotary heat-sealers can handle cellophane or Pliofilm.

PLIOFILM OVERWRAPPER FOR MEDICINE CARTON

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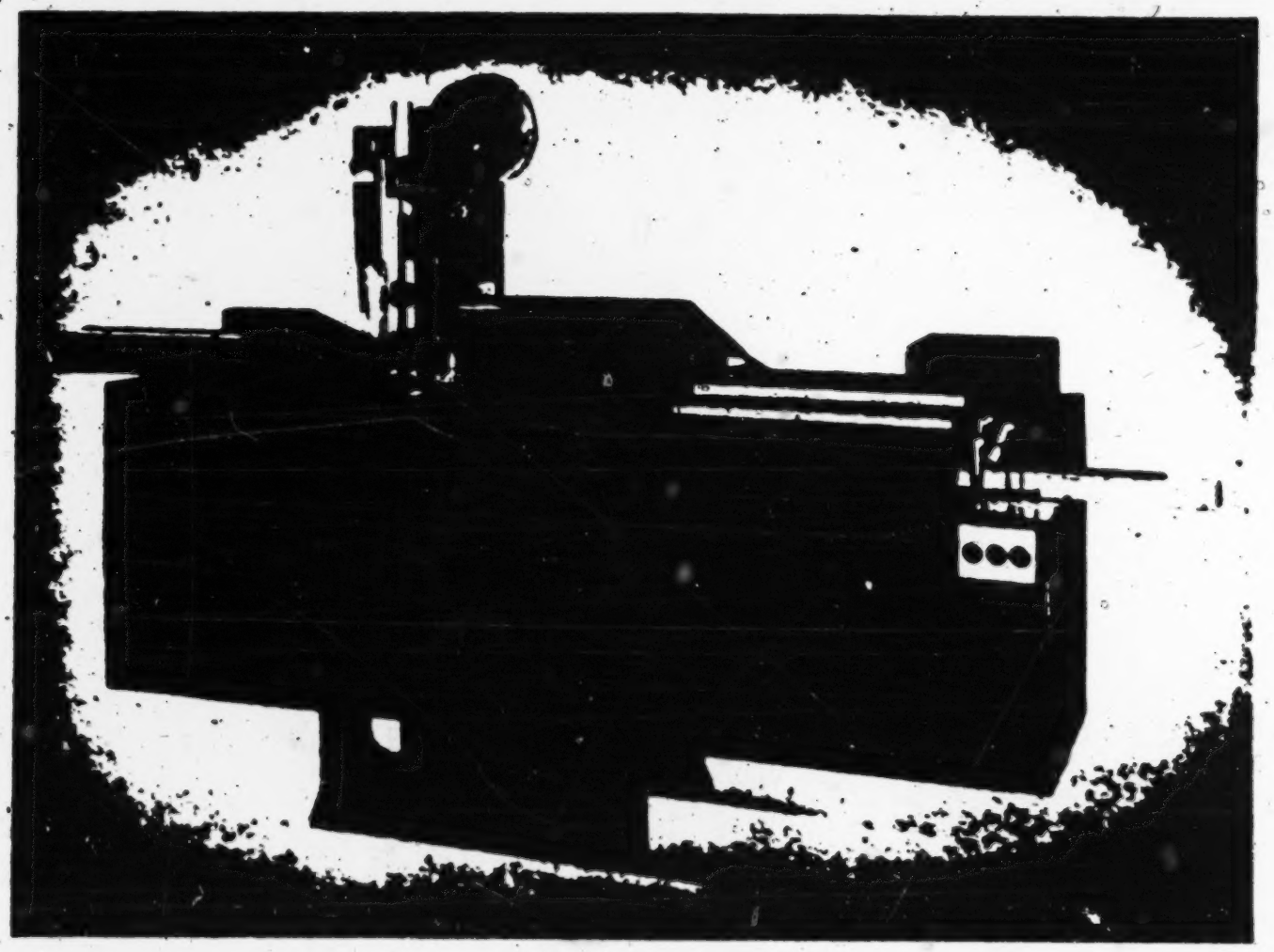
Cartons of Black-Draught are now being overwrapped and heat-sealed in Pliofilm at the rate of 95 a minute on a conventional cellophane-wrapping machine. The machine manufacturer worked out a rotary type of heat-sealer with a knurled sealing surface, which, according to the Chattanooga company, does the job.

The special machine was installed in the Chattanooga plant early in 1942 but had operated on Pliofilm only a short time when the film became unavailable. Chattanooga engineers then converted the machine back to cellophane and used 150 MST for the following five war years. It was not until recently, when Pliofilm again became available, that the machine was reconverted to use Pliofilm once more. It is now in regular use.

CREDIT: *Machine by F. B. Redington Co., Chicago.*

Machine with rotary heat-sealers can handle cellophane or Pliofilm.



M 5320

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
BUFFET POTATO CHIP COMPANY	J. E. CLARK	4-3-47

ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
3151 Reeves Ave.	2-18-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Ogden, Utah	2-2-to 2-4	Candy, Pop Corn & Potato Chips

check

DU PONT CELLOPHANE

SUPPLIER	USE THIS QTR.
DU PONT	
Shellmar	0.5 M

COMPETITIVE MATERIALS

MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
None						

RETURN TO "CELLOPHANE" TRADE ANALYSIS

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M L CHGE
C. W. Younger	Prop.			
B. J. Bingham	Mgr.	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM CODE	R S C	ANNUAL POTENTIAL
Popcorn	1 M			2 M
Carmel Corn	2 M			4 M
Potato chips				4 M
TOTAL	3 M			10 M

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. (a). Popcorn d.w. 300 MST-53
   (b). Carmel corn d.w. 300 MST-53
   (c). Potato Chips d.w. 300 MST-53

2. (a&b). Using single wall 300 MST-53 on pop corn but a d.w. on carmel corn.

(c). Potato chips - using laminated glassine bags - not interested in Cellophane at present.

M 5321

Defendant's Exhibit No. 148

4470

318

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL ☐

CUSTOMER: FRITOS CO OF CALIFORNIA

SALESMAN: I. S. GARDINER

DATE LAST REPORT: 7-3-47

ST. AND NO.: 5320 S. Santa Fe Ave.,

DATE: 8-3-48

CONTROLLED BY PURCHASING AUTHORITY:

CITY-ZONE-STATE: Los Angeles 11, Cali.

CLASS: 1-12

INDUSTRY: Potato Chips, F. U.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MFR.	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	Reigil	Direct.		25M	25M		

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
Wm Crow	P.A	X		
Orman L. White	Div. Res.	X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Corn chips	0	450 MSRC	C	100M
Potato chips	0	" "	"	25M
	0			125M

*SHEETS C-CONVERTED

1. a- Corn chips - 450 single and 300 D W MSRC.
   b- Potato Chips.

2. Their past experience with Cellophane has turned them against visibility. They recognize possibility of end of present oversold condition and need for point of sale selling. Statement fast turnovers in best cure for rancidity partially accepted. They are working toward complete opacity on theory their customer know what is inside. Had no answer to fact many new consumers coming into area and many becoming new housewives and shoppers each year.
   Made arrangements for laboratory test, with plan of a limited market test if satisfactory. Sample roll being ordered.

3. They are on 24 hour production basis and supply, according to them only 80% of demand. White claims flavor deteriorates, according to their careful checks between vat and end of discharge belt 20 feet away.
   White states potato chip business has suffered by 50 to 60% in past year.
   Says Pliolite has done best protective job of materials tested to date.

Note to Dallas Rep: They are having trouble with staling of peanuts in 5¢ bag. White feels

(over)

M 5322

4471

319

Defendant's Exhibit No. 149

(Cont'd.)

J 174

Cellophane too moisture proof and entraps off odors and moisture.
Says LST may be answer.

5 a- "Design for Selling" forwarded to White.
5508 S. Santa Fe Ave., L. A.

M 5322

REPORT OF CALL

320

1. Objective (reason for making call).

2. Specific results of No. 1.

3. Other information, such as:

   Assistance given and/or economy suggestions.

   Objective or objectives developed during call.

   Account knowledge—such as facts, re machine data, personnel, products, production, markets, merchandising methods, etc.

   New items (include type film and kind of package).

   Future plans—new policies—new products, etc.

   Competitive information.

   Complaints.

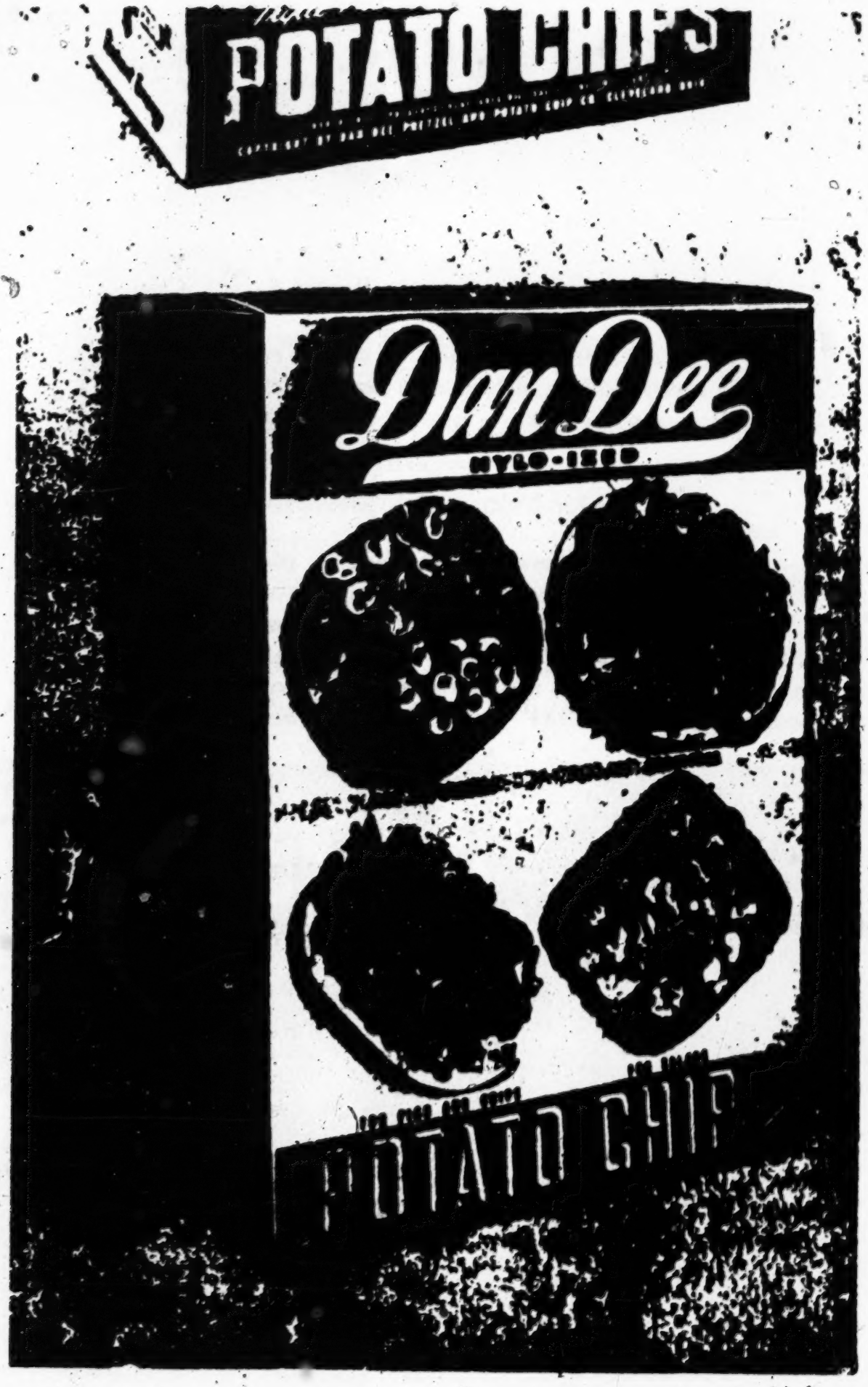
   Success stories.

   Sales status—(explain reason for any important change in customer's purchases).

4. Mailing list changes—customer's old name or address.

5. Action needed by (a) District Office.
   (b) Home Office.

4472



a few ounces. In the one case, the Dan Dee people concluded, the modern sanitary principle was violated; in the other case the unit of sale was usually smaller than either producer or consumer desired. Besides, neither of these methods prevented breakage of the chips.

Experimentation and testing of various packaging materials and forms of packages, conducted for more than a year, convinced them that the most satisfactory solution was provided by a carton with an inner bag of waxed glassine and an overwrap of rubber hydrochloride film (Pliofilm)—the carton to prevent breakage of the chips and the overwrap and inner bag for retention of a low moisture content. Fortunately, with the end of the war the film has become more available and the new package is now a reality on the market.

A pound of potato chips bulks large. A carton to hold that quantity is 12½ in. high, 8½ in. wide and 4½ in. deep—a total surface of more than 570 sq. in. or the equivalent of about eight pages of space in a standard 7 in. by 10 in. magazine. That area presented an advertising opportunity too alluring for the merchandising-minded Dan Dee organization to overlook.

They put the challenge before one of their carton suppliers, who took full advantage of the opportunity, utilizing kodachrome shots in a manner new to the potato chip field. The front panel presents an actual full-color photograph of a home scene where potato

Potato chips in party size are suggested by the full-color Kodachrome reproduction on the front panel of this giant carton. Side and back panels effectively suggest uses and benefits. Waxed glassine liner and clear Pliofilm overwrap assure moisture protection. PHOTO, MELPRINT, INC.

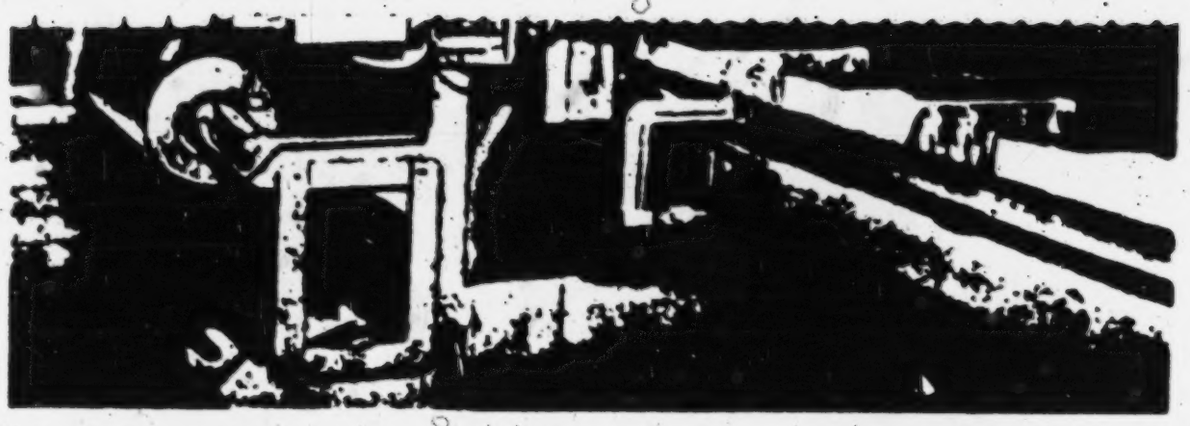
M 5320

panels are used for product and brand name identity. Few dealers would neglect the front or back panels for display purposes, but even if one did, the side and end panels would do a merchandising job, anyway.

Standard operations in the Dan Dee plant are perfectly adequate for filling and closing inner bag and carton, but the outer wrapping with rubber hydrochloride film called for considerable modification of their equipment. As yet, stock models of standard wrapping machines have not been developed that will handle this type of film on a package of this size at mass production speeds. Accordingly, the machine maker and the producer of the film cooperated in the necessary engineering work. The film is a monolithic sheet which upon the application of heat softens and becomes tacky through and through. Therefore, it generally cannot be used in the standard packaging machines designed for cellophane, waxed paper, etc., because these machines are usually equipped with stationary hot plates over which the material slides. The temperature and the friction of these hot plates cause the rubber hydrochloride film to wrinkle and draw and make the material difficult to handle at high rates of speed.

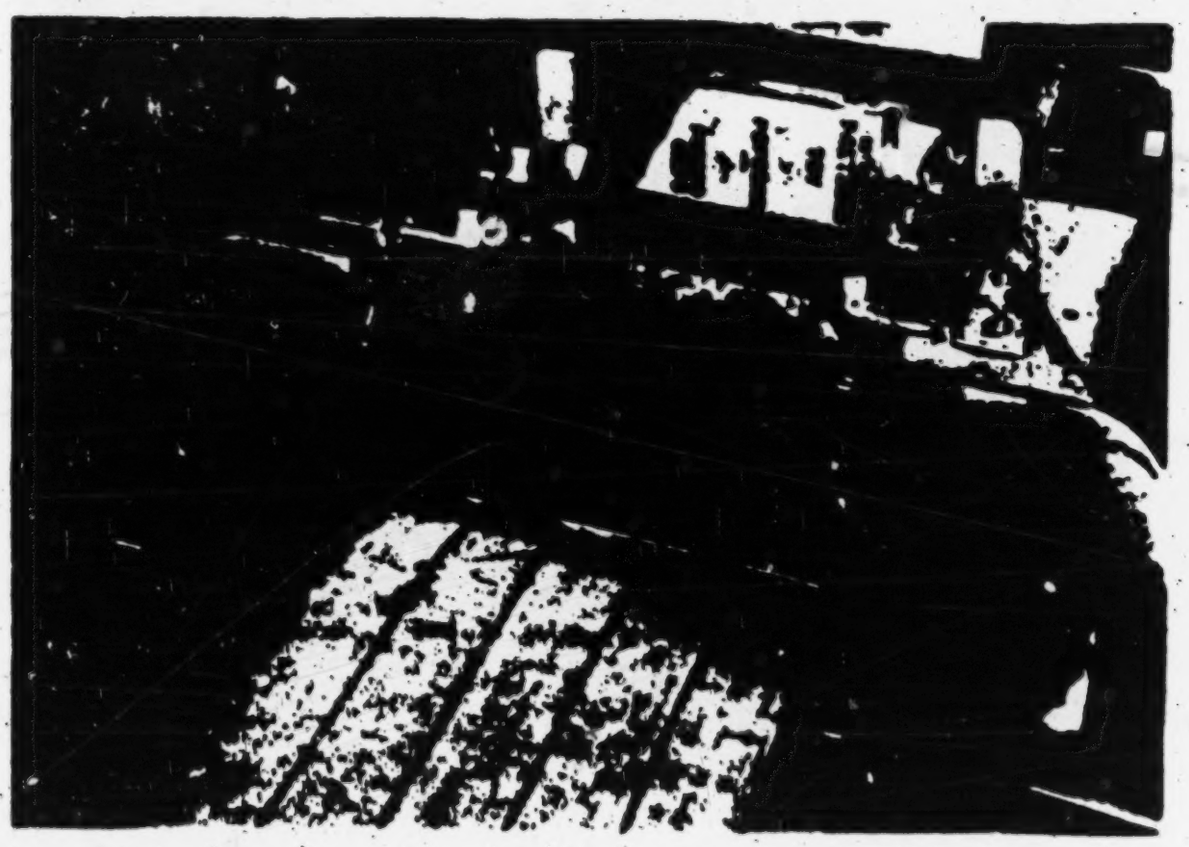
To make a proper seal this film requires a much closer control than is needed for coated cellophane and other heat-sealing materials. The exact conditions for making a weld involve a number of factors. One of these is the time of dwell, which is generally fixed and controlled by the speed of the machine. Other factors are the pressure, the number of plies which the heat must penetrate and the gauge and type of film. The average temperature required is 210 deg. to 215 deg. F., although

M 5320



Filled cartons enter machine on lower level (moving away from camera) and return on upper level, fully wrapped and ready for shipping cases.

Close-up of carton between two oscillating plates which heat-seal two ends. Bar, operating through slot in unheated bottom plate in foreground, seals film on back of carton. Passing between rotary brushes which firm end seals, wrapped carton is discharged on conveyer belt in foreground.



Defendant's Exhibit No. 150

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Braud's Potato Chip Co.	E. W. Ruff	7/15/48

ST AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
3065 Choctaw Dr.	9/10/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Batom Rouge La.	1-6	PC-Meat

N. Allen

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC	1ST QTR. PUR	2ND QTR. PUR	3RD QTR. PUR	4TH QTR. PUR.
DU PONT	0				0	0	0	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE
Wilfred Paul Braud	SM	X		
Mrs. W. P. Braud	Mgr.	X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Pork skins	0	MST-54	C	8M
Potato chips	0	"	C	10M
TOTAL				

R-12727—REV. 11-47 • R-ROLLS S-SHEETS C-CONVERTED

1. Film on PC and meat sking, Krispette samples.

3. Braud has run tests on skins and chips using Dobeckmuns d.w. MST-54 vs heat sealed laminated glassive. Says latter gave better protection. Will follow with Dobeckmun to determine probable reasons. This area is very low and humid. No action here on cheese curls as he handles Elmers, Chee Wees.

M 5336

CELLOPHANE TRADE REPORT - DIRECTOR OF SALES COPY

FIRST CALL

CUSTOMER: Simpson's Inc. T/A Dali-Fresh Food Products

SALESMAN: J. A. Schaeffler

DATE LAST REPORT: 9/1/48

ST. AND NO.: 3-5 N. Willow

DATE: 12/13/48

CONTROLLED BY PURCHASING AUTHORITY

CITY-ZONE-STATE: Tampa, Fla.

CLASS: 1-12

INDUSTRY: PC&PC-M

C-13

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR. PUR.
DU PONT	0	Sylvania	Direct	MT	4500	4500	0	0
Adams	2000		Std. Prt	MT	4500	4500	0	0

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M L CHGE
Mrs. Chas F. Simpson	Pres.	X		
Chas F. Simpson	Sect.	X		

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-12727 A

* R-ROLLS S-SHEETS C-CONVERTED

1. Follow recent visit of Mr. Simpson on Atlanta Office. Get requirements and discuss our ability to supply.

2. Estimates will need 500-600 pounds per month unprinted Cellophane for inner liner in potato chip and pork skin bag for next three months. Southern Wax Paper will supply printed Cellophane. Suggested consider glassive for inner liner as we can't promise any definite regular monthly quota at present.

3. Has written Reigel Paper Co. re inner liner. Parker, manager for Tom Huston in Fla. recently t told Simpson will want d.w. Cellophane bags on potato chips for Jan. Feb. and March and waxed bag for balance of year. Claims light effects product and tunne rancid during slow season. Explained to customer this would make it difficult to work out Cellophane for three months and heavy season.

Now producing Korn Kurls for entire S.E. including N. and S. Carolina. Adams in Beloit is supplying raw products and all bags (d.w. printed Cellophane outside, amber glassive inside). Now handling 200M bags per month (1M pounds per month). Supplying Drennon 100%. Has not started producti

M 5038

4474

322

Defendant's Exhibit No. 151

R-12727-R

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER: Dali Fresh Food Prod.

SALESMAN: J. A. Schaeffler

ST. AND NO: 305 N. Willow

DATE: 12/13/48

CITY-ZONE-STATE: Tampa, Fla.

CLASS: 1-12

on pork skins yet.

Has been using up inventory of both printed and unprinted Cellophane during the summer. Claims tests with Merritts pork skins in Tampa area show d.w. glassive bag holds skins crisper than d.w. Cellophane. Also combination one wall glassive and one Cellophane better than d.w. Cellophane.

4475

Defendant's Exhibit No. 301

323

Defendant's Exhibit No. 152

The Month Is February

Father, I cannot tell a lie! I did it with my little hatchet."

both paperboard (drum stock) and steel were bottlenecks to production. After the cessation of hostilities, there was an easing in supplies of paperboard, but steel and components such as closures remained a limiting production factor. Nevertheless, it is estimated that during 1948 the industry may have achieved a production above 18 million units. At what point production would level off were unlimited steel supplies and closures available is problematical. It should be kept in mind that unlimited steel supplies would probably also mean increased competition from similar types of all-steel containers, production of which is presently limited due to the shortage of steel. In view thereof, the fibre drum and pail industry might be presently operating at a peak level.

Paper Shipping Sacks

In the past few years, the production and use of multi-walled paper bags has increased phenomenally. In 1933, for example, this country used approximately 310 million multi-wall shipping sacks, compared to 1,100

tion of wire and wire products on the other, the need for continuing abnormally large inventories of steel by wooden container manufacturers seems unnecessary. It has been estimated that the entire wooden container industry consumed approximately 165,000 short tons of steel in the manufacture of wooden containers of all types during 1948. Even if steel supplies were unlimited, it is doubtful that this amount would be exceeded during 1949 and it appears more likely that less steel will be used.

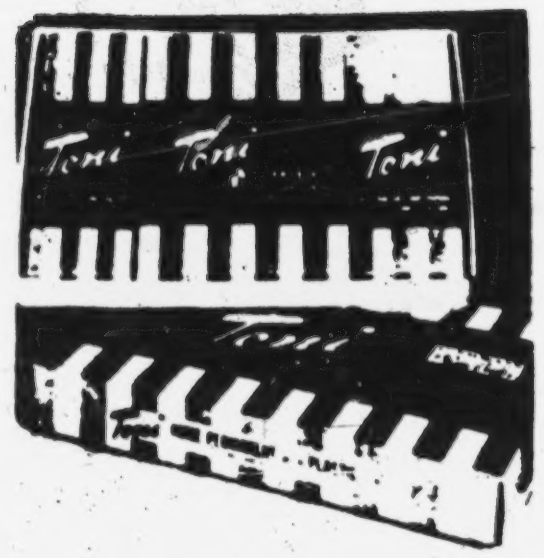
Nailed Wood Boxes, Crates

The demand for nailed wood boxes and crates has continued above prewar demand, although it is estimated production during 1948 will show an over-all decline of about 10 percent from 1947. During the first half of 1948, it was thought that with the nation's foreign aid program, the demand for boxing and crating for export purposes might give the industry an increase over 1947. This has not proved to be the case and, except for a continuing high demand for vegetable and fruit boxes and containers and the crating of heavy industrial goods, the industry might have experienced an ever greater de-

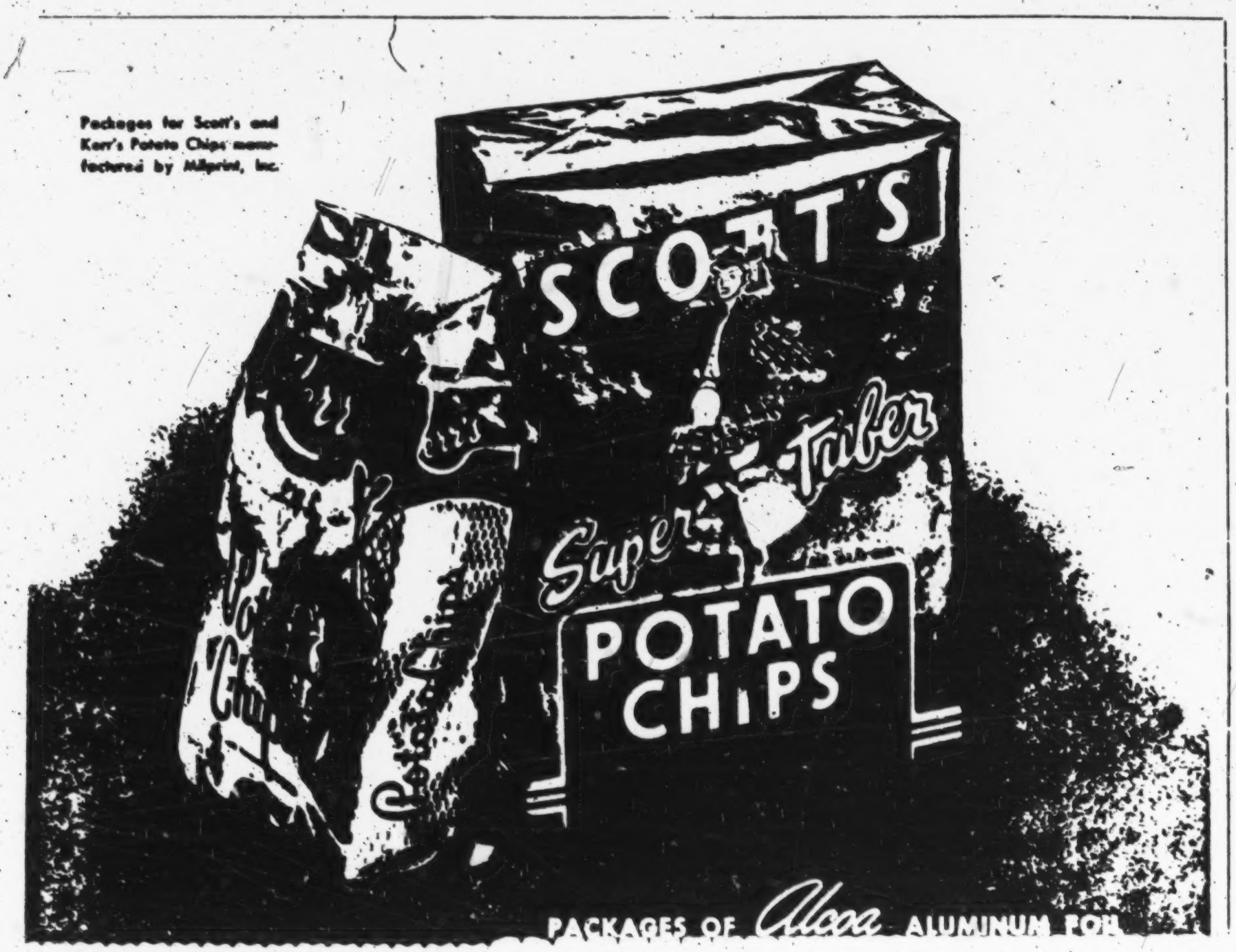
Defendant's Exhibit No. 153

has developed a special method of bonding 2 painted surfaces together with no visible marks showing through to the unpainted outside surface. These plastic fronts will be used on vending machines for office buildings, theatre lobbies, stations and restaurants, it has been announced by the manufacturer.

COLD WAVE KIT—The Toni Company is introducing its new Cold Wave Kit in a folding box designed to win *high spot* location on drug, notion and cosmetic counters. This is claimed to be the only home permanent kit which includes the new plastic professional curlers, a replacement for paper curlers. Comprising a complete cream cold wave unit, package holds everything needed for a permanent wave. Kit includes 3 individual boxes packed in a larger folding carton. Two of the enclosed boxes contain neutralizer, end papers and elastic curler bands. The third holds sufficient plastic curlers for a complete permanent wave. A special re-fill unit was developed for the time when neutralizer and end papers are exhausted. This unit is available wherever kit is sold. Effective use of 2-color printing is carried out on both the unit container and individual boxes. Combination, shop tested, is a magenta and gray. A wide band of the "Toni pink" runs across carton and half-inch vertical bands of gray cover remainder of box. Brand name and product identification are printed in reverse plate.

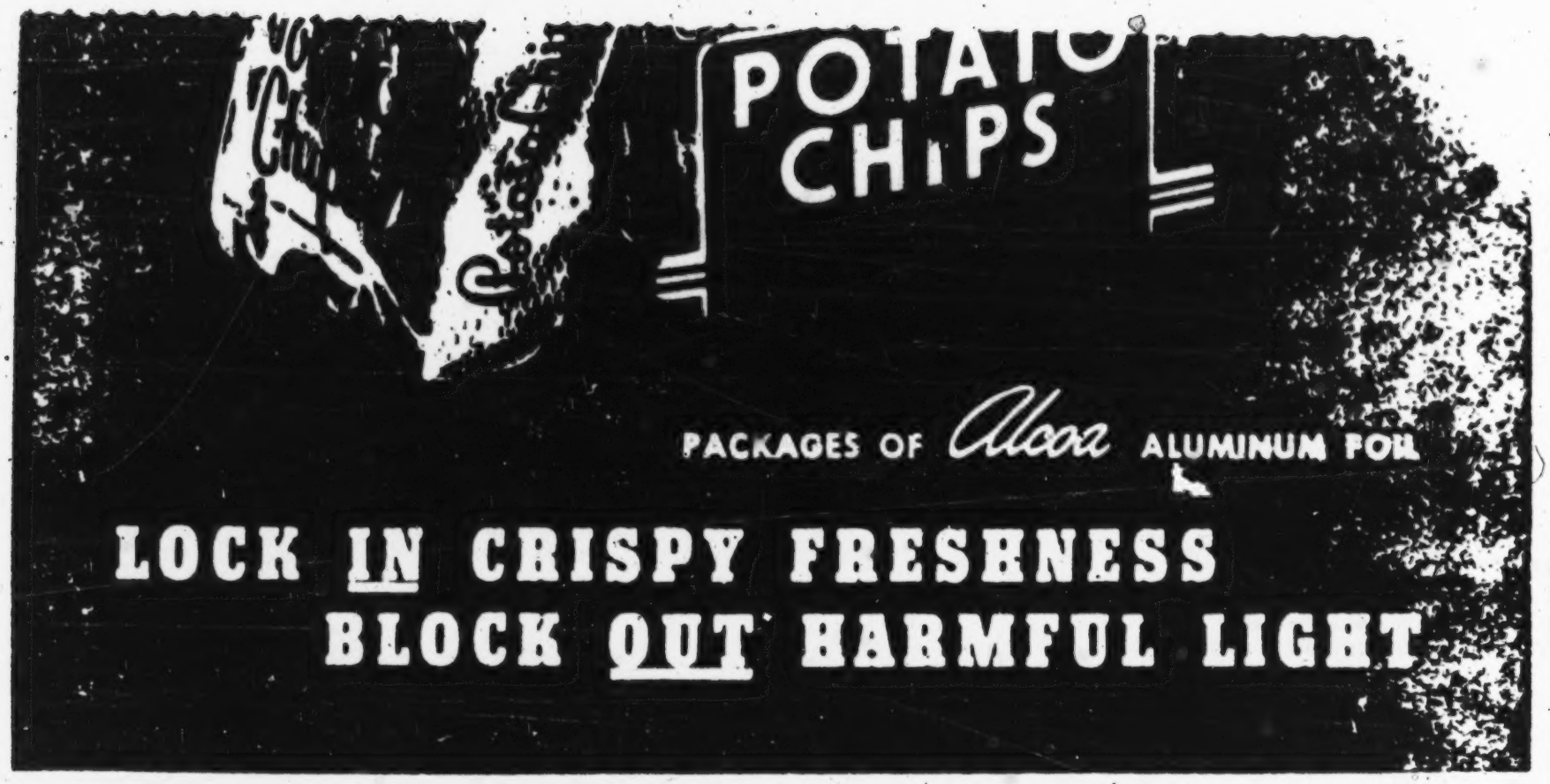


Packages for Scott's and Kerr's Potato Chips manufactured by Milprint, Inc.



•

WATER SPORTS—Summer bathing enthusiasts will be able to enjoy water sports in a bigger and better way with the Velofilm beach ball-



Aluminum Foil's sparkling surface does more than catch the shopper's eye. It reflects away the harmful sunlight that deteriorates potato chips and many other products.

Alcoa Aluminum Foil is lightproof, moistureproof, gasproof, greaseproof. When sealed in aluminum foil, potato chips stay fresh and crisp. Flavor can't leak out, dampness can't creep in.

For eye appeal *plus*, your package of Alcoa Aluminum Foil may be embossed or printed with any of a wide variety of transparent or opaque inks and lacquers.

Leading package manufacturers have had wide experience in developing packages using Alcoa Aluminum Foil. Their expert advice is available to help you plan better packages for the future. For their names, write to ALUMINUM COMPANY OF AMERICA, 2152 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA

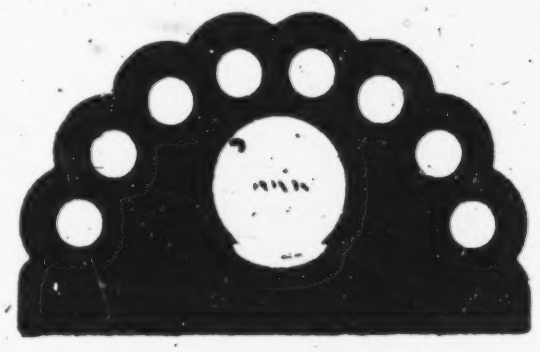
MORE people want MORE aluminum for MORE uses than ever

ALCOA ALUMINUM FOIL

that are being made by converters from a plastic film supplied by Firestone Tire & Rubber Co., Akron, Ohio, according to a recent company announcement. The balls are said to be the newest sports attraction in the swimming pool of the Queen Mary. Accompanying illustration shows Estralita posing with one of the new balls in the luxury liner's pool.

•

COLOR CHART — Latest sales aid from Pond's is a compact, easel-back chart showing actual samples of new



M 5326

Defendant's Exhibit No. 154

B-12319-

DUPONT

Cellophane
TRADE MARK

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	☐		
PROM. SECT.	☐		
SALES SERV	☐		
ADV. SECT.	☐		
CONV. SECT.	☐		
PROD. DEV.	☐		
SERVICE SECT.	☐		
PLANNING	☐		

Salesman: C.H.Schreep | Date: 3-31-41 | Type Call: P | | |

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

1. None.

2. First call.

3.a. Due to past trouble with bag on tapioca suggested replacing with die cut carton, bag on inside. Added strength and good type package for shelf display.

b. Bag insert on die cust carton for tapioca.

c. Believes production cost would be prohibitive. Are going into window carton on tapioca and has specified Protectoid for window. Writer reviewed DuPont work on cellophane C.A. and higher qualities as compared to competitive sheets. Urged specification our film on basis of superiority. Requested sheets for lab. test.

4. Other food items. Follow window cartons.

5. Send J. A. Chrisen five sheets, each 12 x 16" for experimenting.

100 C.A. - 43
130 C.A. - 43
150 C.A. - 43

Mark sheets as to type.

C.O. HANDLING

7-25	NI	
41		
		M 5327

J205

8-8 41 AGC	S	J.A.Chrisen.Dob. 500.Neostyle 1000.Mlprt.300 Followed on tapioca mixes still in bags. R. Not having difficulty with this item now.Has shredded cocoanut for H.D.Lee Co. of Kansas City. 8 oz. double walled 300 MST bags by Mlprt. Complained of slipping of printing on this due to printing being on inner bag.Has taken up wth Mlprt. and next job will be done on reverse side of outer bag.
12-5 41	S.	J.A.Chrisen, P.A. Neostyle 1500. Mlp.500. Dob. 500. Shredded cocoanut has been in 300 M.S.T. DW bags about 8 weeks. Use tin closures and may have to change due to scarcity. Negative: possibility of infestation. However housewives use little coanut at a time and a closure needed. Enabled to give some pertinent facts on strengths of various Cellophane bags when asked by Chrisen as result of dust. Bulletin HO-50-S, 12-1-41.

M 5327

4479 327

supplies would probably also mean increased competition from similar types of all steel containers, production of which is presently limited due to the shortage of steel. In view thereof, the fibre drum and pail industry might be presently operating at a peak level.

Paper Shipping Sacks

In the past few years, the production and use of multi walled paper bags has increased phenomenally. In 1935, for example, this country used approximately 310 million multi wall shipping sacks, compared to 1,100 million in 1943 and over 2,400 million in 1947.

Wooden Containers

During 1946 and the early part of 1947, the shortage of lumber continued to restrict essential wooden container production. During its peak year of war operation, the container industry used approximately half of the lumber produced in the United States, or slightly over 15 billion board feet. Normally, it is believed that the production of wood boxes, crates, drums, baskets, hampers, barrels, and dunnage, consumes about one-sixth of all lumber produced. With production of lumber rising during 1947 and 1948, this basic raw material, to which wooden container manufacture is so sensitive, no longer hampers maximum output. Wire and wire products such as nails, basic steel components needed in free supply for maximum wooden container production, also presented no serious problems to the industry during 1948. While hoop steel and container hardware were not in as free supply, no serious shortages occurred. A study reveals that, with natural drop in production of wooden containers from the war years on the one hand, and continued high produc-

9 out of 10 buy Riegel

Nine of the ten largest potato chip makers buy Riegel Papers regularly

Among the makers of potato chips, and in many other fields, you will find most of the sales leaders are regular Riegel customers. They buy from us because they know we can make packaging and industrial papers that combine technical excellence with economy and production efficiency. Their confidence in Riegel is an important reason why your company—whether large or small—should see if we can also help you. Write to Riegel Paper Corporation, 342 Madison Avenue, New York 17, N. Y.

Riegel Papers We produce over 600 different packaging, printing, converting and industrial papers. If we don't have what you want, we can probably make it.

M 5325

DU PONT

☐ FIRST CALL

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

CUSTOMER	SALESMAN	DATE LAST REPORT
Delmonico Foods, Inc.	H. C. Eastmond	10-9-47
ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
2521 S. Floyd St.	11-6-47	
CITY - ZONE - STATE	CLASS	INDUSTRY
Louisville, Ky.	1-12	Noodles, Mac.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS							
SUPPLIER	USE THIS QTR	MANUFACTURER	BUY'D THRU	PT. MT. CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.	REPORT CALL BELOW
DU PONT	3 M	Celanese	Bradley-Gilbert	CA	0	0	0	500	SEE REVERSE SIDE FOR GUIDE
Milp.	6 M	Syl.	Syl.	MT	0	0	0	500	

RETURN TO CELLOPHANE TRADE ANALYSIS

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
Jos. Viviano	Pres.			
Peter Viviano	V.P.	x	M	
Robert Tellman	P.A.	x	S	

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
TOTAL				

12727—REV. 2-47

1. Follow up on all window cartons noodles and mac.

2. Their plan to pack Delmonico brand noodles and stick mac. in window cartons and full cellophane printed bag and printed wraps and sell side by side to determine which pkg. has better consumer acceptance is meeting with some difficulty because retail stores prefer one type of pkg. or the other.

Safeway Stores in Washington, D.C. insists on window cartons. Fischer Bros., Cleveland, insists on cellophane bag and printed wraps.

Viviano said they are currently working with Jewel Tea on contract for their retail stores.

On a ten case test one of Fischer Bros. stores cellophane outsold window cartons 3 to 1.

Defendant's Exhibit No. 155

M 5067

DU PONT

FIRST CALL ☐

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

CUSTOMER	SALESMAN	DATE LAST REPORT
The Kroger Co.	V. H. Peterson	7-14-47
ST. AND NO.	DATE	CONTROLLED BY
35 E. 7th St. (hdqtrs.)	7-18-47	PURCHASING AUTHORITY
CITY - ZONE - STATE	CLASS	INDUSTRY
Cincinnati, Ohio	1-48	Food

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THRU	PT. MT. CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	210 M	Syl	direct	MT	63 M	90 M	120 M	
Converters	25 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

RETURN TO CELLOPHANE TRADE ANALYSIS

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
A. S. Grogg	Buyer	X		
Al Reine	Mdse. Bak. & Paste Gds.	X		
Larry Flinn	" Candy and gum	X		
Fitzgibbons	" mgr. meat	X		
Compton	" produce	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
TOTAL				

R-12727—REV. 2-47

1. Follow up on Kroger change in mac. pkg.

2. Raine, Merchandise Baked & Paste Goods, stated it has been definitely decided to go to window cartons for packging mac. and spaghetti products for a trial period of 9 mos. to a year.

They are not sure they have the right pkg., and that they may want to go back to cellophane at the en of the above designated period.

Reasons for present change are as follows:

1. Excessive breakage cellophane bags in stores
2. Unable to get proper display for cellophane packaged paste goods in their stores.
3. Some suppliers unable to get sufficient and right kind of cellophane due to small or no allocation with us and/or converters.

Raine stated they are still open for suggestions on improved pkges. and are not sure they are doing the right thing at this time, but the die is cast for the next 9 mos. at least.

3. Meat - S.S. Fitzgibbons very well satisfied with results to date on s.s. meat test at Peebles Corner Store.

2-22-47 - ATL
7-23-47 "

M 5069

4481

329

Defendant's Exhibit No. 156

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL

CUSTOMER		SALESMAN	DATE LAST REPORT
Arkansas Rice Growers Coop. Ass'n.		L. S. Willson	2/6/[illegible]
ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY	
	10/7/48		
CITY-ZONE-STATE	CLASS	INDUSTRY	
Stuttgart, Arkansas	1-6	Food	

Wagner
Hardtner
Ellis
Jonesboro
Hoobler
Please

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	None	None	0					
Bemis Bag	*							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE
Clark Smith	Sales, Mgr.	x	M&S	
			-	

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Rice	?	PT	C	?
1,2,3, & 5 lbs. units				
TOTAL				

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. Account knowledge.

2. Plenty of information to absorb to say the least. The following data best be put in outline:

(a) Presently using a Delta-Seal machine developed by Bemis Bag Co. which is auto. except for filling - speed approximately 40/ per minute.

(b) Machine used for sealing both Cellophane and Kraft 3# bags.

(c) Printed bag furnished by Bemis has seam down side and is sealed with a National adhesive. The top flap of the bag is loosened, then cut off at the end and thus a spout is formed for easy pouring.

(d) The present 3# bag is a D.W. 300 and 600 PT and shortly will be changed over to a D.W. 450 PT after sealing the bag is placed "top" down and weight of rice makes for a good seal.

(e) Present rate of packaging - 110 bales /hr.-23 bags /bale.

(f) Shellmar automatic weighing, filling, and sealing

M 5331

4482

331

Defendant's Exhibit No. 158

4-13

machine due in about 1st December and will be used for 1# and 2# bags - now using window cartons for these items.

(g) Bemis representative had proceeded me by a couple of days.

(h) Appreciated my interest in dropping in and asked me to do so again.

(1) 5. B. - E.A.Wight - *Is Bemis Bag Co. a converter of DuPont film? I'm not sure - please advise.

(2) Technical Section -1.Is MST or PT best suited for rice? Shellmar machine is heat sealing - - right?

2. Rice, after it is bagged, is "fumigated" with methylebromide. This works satisfactorily with PT - how about MST?. Advise - In fact if anything new develops in this industry will appreciate hearing from you.

EAW 10/21

10/25

M 5331

REPORT OF CALL

1. Objective (reason for making call).

2. Specific results of No. 1.

3. Other information, such as:

   Assistance given and/or economy suggestions.

   Objective or objectives developed during call.

   Account knowledge—such as facts, re machine data, personnel, products, production, markets, merchandising methods, etc.

   New items (Include type film and kind of package).

   Future plans—new policies—new products, etc.

   Competitive information.

   Complaints.

   Success stories.

   Sales status—(explain reason for any important change in customer's purchases).

4. Mailing list changes—customer's old name or address.

5. Action needed by (a) District Office.
   (b) Home Office.

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DUPONT

FIRST CALL ☐

CUSTOMER: River Brand Rice Mills, Inc.

SALESMAN: J. R. Scott

DATE LAST REPORT: 8/19/49

ST AND NO.: 1420 St. Bernard St.

DATE: 12/9/49

CONTROLLED BY PURCHASING AUTHORITY:

CITY-ZONE-STATE: Houston, Texas

CLASS: 1-6

INDUSTRY: Rice

[redacted]
[redacted]DLER
[redacted]CWAY

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	1000				0	0	0	0

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO*	M L CHGE
Mr. Rivers	pres	x	MS	

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Rice	?	MST	RC	?
TOTAL				

R-12727-A R-ROLLS S-SHEETS C-CONVERTED

1. A. Determine ~~extent~~ extent of cello rice packaging

   B. Present polythene.

2. A. Continue to ✓ package rice in cello only when demanded. Currently have several lots of bags ordered from Shellmar. Will continue policy of packaging rice in cello only when trade demands.

   B. Seemed quite interested in polythene - explained in detail. Left some samples for trial and test.

M5072

4484

334

Defendant's Exhibit No. 160

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

~~W. J. Harte~~
~~C. W. Shields~~
~~W. G. Hunter~~
Brooks

CUSTOMER: La. State Rice Milling Co.
SALESMAN: E. W. Ruff-R. E. Sidwell
DATE LAST REPORT: 6/22/48
ST. AND NO.:
DATE: 8/31/48
CONTROLLED BY:
PURCHASING AUTHORITY:
CITY-ZONE-STATE: Abbeville, La.
CLASS: 1-6
INDUSTRY: Rice

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0				0	0	0	
Shellmar	100							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS		TITLE	INT VD	MAIL TO	H L CHGE
W. B. MacMillan	Dir	Sales	X		
L. O. Brousaart	Asst. "	"			
J. F. Faber	VP & Gen	Supt			
F. A. Godchaux Sr.	Chairman				
F. A. Godchaux Jr.		Pres.			
Hamilton			X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS
10-14-48 mtm

PRODUCTS AND CELLOPHANE WRAPPING — PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Rice	160M	PT	C	240M
TOTAL				

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. Cover C. W. Shields letter 8/23 and memo 8/12.

2. They are proceeding with MST usage on Shellmar machine. Still using PT on Bemis Deltasealer on three pound bags.

3. Now running film and cartons 50/50 at Abbeville Plant. One pound bags average 20-25 per minute over 24 hour day. Two pound PT bags on Deltasea probably average 15-20 per minute at best. About sixty million consumer packages will be turned out this season at all seven plants. Since this is only mechanized plant we must assume less than 50% will be in film, probably 20 million in Cellophane.

No change their plans to run plain rolls with printed stock, they are negative on the idea now (probably due Shellmar pressure) and are booked for needs through Dec.

M 5334

SEP 7 1948

Defendant's Exhibit No. 161

DUPONT

CELLOPHANE — REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
River Rice Milling Co.	J. R. Scott	?

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1420 St. Bernard St.	8/19/49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Houston, Texas	1-6	Rice

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
Mr. Rivers	Pres.	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION*	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Rice	?	MST	R/C	?
TOTAL				

R-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. Meet contacts and devel. acct. knowl.

2. Just starting on 1949 crop. Are packaging in numerous ways, printed carton, window cartons, printed carton and cello overwraps and cello bags. Only carton being overwrapped is brown rice. Current requirements for plain film very small.
Covered current ordering, delivery and discount.

AUG 26 19..

M 5071

Defendant's Exhibit No. 162

Defendant's Exhibit No. 163

SRC-1 REV. 18000-3 4-33

DUPONT CELLOPHANE
REG. U.S. PAT. OFF.

TRADE REPOR'

(District Office File Cop'

Salesman: Harte Date 10-24-33 No. Spec.

Firm Kellogg Co. Bus. Cereal Class 1-12

St. & No. E. Michigan Ave. City Battle Crk. State Mich.

Controlled by: Same

Final Decision by (Titles) W.K. Kellogg, Pres., Mr. Freeman, V.P. Ross Adams, V.P. Contacted on this call? Latter two

Buyer Mr. Udell Contacted on this call? no

Others Contacted this call (Titles) Above

Type of Call—Productive X Service

Sources of Supply	Est. Cons.-lbs. This Quarter	If using competitive material, state type and reasons
DuPont	7,000	

Items wrapped in Cellophane: Window box for wheat biscuits made by Sutherland Paper Co., Kalamazoo, Mich. 600 M.T.

Other products on which Cellophane could be used: (Note new products in work) Cereal of several kinds. No new products in work.

a. Sales tools used on this call:

Samples X Trav. Disp. X Photos Pack. Dev. X

Cons. Ads. Trade Ads. Mkt. Sur.

b. Agreement account? no

c. Did you secure order? no

d. Service and general remarks—below

Built our story here around protection plus possible visibility, toward the use of M.T. Cellophane for wrapping cartons of cereal. Especially the hotel size for Gulf Coast markets. Related Wrigley experience and results also told of our own tests on cereals in M.T. versus Wax Paper. Used their own successful use of window box on Wholewheat Biscuits to prove that Cellophane did command better display position and thereby gained sales advantage. Both listened interest-

(See Below)

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
	10-25-33	10-25-33	

Defendant's Exhibit No. 164

R-12319

DU PONT

Cellophane TRADE MARK
TRADE REPORT
(Trade Analysis Copy)

SALES COR. ☐
PROM. SECT. ☐
SALES SERV. ☐
ADV. SECT. ☐
CONV. SECT. ☐
PROD. DEV. ☐
SERVICE SECT. ☐
PLANNING ☐

Salesman M.T. Callender 1/21/41 Type Call

Firm General Mills, Inc. Date Last Call 1/9/41 Type Call Date Next Call 1/31/41 Type Call 1-12

St. & No. Chamber of Commerce Bus. Food

City & State Minneapolis, Minn. Controlled by

Decision Maker Walter Barry, V.P. No Contacted this call?

Buyer Mr. Andrews Yes Contacted this call?

Others Contacted this call (Titles) C.V. Nelson P.A. Barnes, Prod.Control Bell Jr. A.S.I

Sources of Supply	Est. Cons. lbs. this Calendar Quarter	If using competitive material, state type and reasons
	none	

Items in transp. sheeting (specify which is competitive or converted film)

Other potential products:

Cereals, flour

a. Sales aids used—specify below:	d. Mailing list changes—below:
b. Latest success story—below:	e. Agreement expires?
c. Service and general remarks—below:	f. Did you secure order? No

a. Samples.

c. I gave them quotations on 300 M.S.T. for a carton over-wrap on some new product they are considering similiar to a soup-mix-they insisted they were not yet in position to tell us what this product is-however we will be kept informed (I will find out some way before long) It will not be ready for market until Spring and it will be in 300 MST.

DU PONT

[X] FIRST CALL

CELLOPHANE TRADE REPORT - DIRECTOR OF SALES COPY

CLB

H. G. Hudson

CUSTOMER	SALESMAN	DATE LAST REPORT
VAGIM PACKING COMPANY,	D.K.Shoop	D

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1412 C. St ,	10-2-47	

CITY-ZONE-STATE	CLASS	INDUSTRY
Fresno, Calif.	2-4	Dried Fruit

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THRU	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT		Goodyear	Royal	R Hydro.	2 M	4 M	2 M	4 M
Dob.	1 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
J. G. Vagim	Pres.	X		
E J. Vagim	S.M.	M S	X	
Chas. Vagim	Supt.	X		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
Dried Fruit	1 M	#450 MST-52	C	6 M
TOTAL	1 M			6 M

1. Raisins, apricots, peaches, pears in tray, overwrapped MST-52.

2. Exhaustive tests have convinced subject that dried fruits remain edible longer, and are protected against outside infestation best by Royal's Goodyear lined Hav-O-Tainer bags. Raisin bag has no visibility -- others have small window.

3. Cellophane bag for raisins is supplied to one customer, who wants visibility, and who has a fast turnover.

5. (a) Route Sheet forwarded.

M 5073

R-12727—REV 2-47

Defendant's Exhibit No. 165

Defendant's Exhibit No. 166

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
ROSENBERG BROS. & COMPANY	D.K.Shoop	12/29/47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
230 California Street,	1/30/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
San Francisco 6, Calif.	1-12	Nuts -- Dried Fruit

① ~~Sheet~~ ~~Dr. of Sales~~ ~~W. B. Hunt~~

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT ZPCO	5 M	Goodyear	Direct	R.Hydro.	2 M			
Dob.	2 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
D. K. Grady	V.P.	X	M	
M. Clemens	P.A.		S	

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	* R S C	ANNUAL POTENTIAL
Dried Fruit	36 M	450 MST-52	R	42 M
Nuts	39 M	300 MST-53	R C	39 M
TOTAL				

RETURN TO "CELLOPHANE" TRADE ANALYSIS

LBS

1. Dried fruit, boat overwrap, #450 MST-52 printed.

2. Interested, and will have converters submit sketches.

3. Competition: Expect to continue Goodyear Film on portion of production of high moisture content prunes. Don't like appearance of prunes in rubber hydrochloride bags, which are made on Simplex machines equipped with "Teflon" on sealing bars, but say Goodyear film holds moisture better, and retards sugaring. Do not believe their bag production will be as large this year as in 1947.

5. (b) L. B. Steele: Your letter January 22nd. Subject appreciate our interest in their "Ad" which appeared in New York Journal of Commerce and California Fruit News. All the reprints they have left are being sent you, and you have their permission to make additional reprints, to be used in any way you desire.

Under their re-organization, subject's advertising department is not functioning, temporarily. They could not say what form their future advertising will take.

Ralph G. Cahn Advertising Agency, 580 Market St., San Francisco 4, California, handles subject's account.

FEB 9 1948

M 5081

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

Complementing its vast fresh fruit and vegetable shipping and canning industry is the West Coast's big dried fruit industry. The most important producing

LAMINATED FOIL OVERWRAP combined two objectives of continued trend to consumer-unit packaging: moisture retention and colorful surface for sales appeal. Packages for fruit include cellophane, Pliofilm, kraft bags; cartons, "brick" packs.

Complementing its vast fresh fruit and vegetable shipping and canning industry is the West Coast's big dried fruit industry. The most important producing
area for dried fruits in the world, the West Coast States account for almost half of the world's supply of these products. In 1946 the dried fruit industry on the West Coast altogether produced over a billion pounds of dried apples, apricots, peaches, pears, figs, prunes, raisins, currants and dates.

As a consumer of packaging materials, the dried fruit industry ranks with the most important of the food industries. Its annual production requires at least 10 million corrugated shipping cartons or wooden boxes and enough consumer-sized cartons, glassine, waxed and parchment paper, bags, foil, transparent films and other materials to package from 200 to 400 million consumer-sized packages. Requirements are definitely expected to increase. The dried fruit industry, like its blood brother fresh fruits, has felt the urge toward more attractive pre-packaging for better merchandising. Activities in this direction have increased enormously since the end of the war.

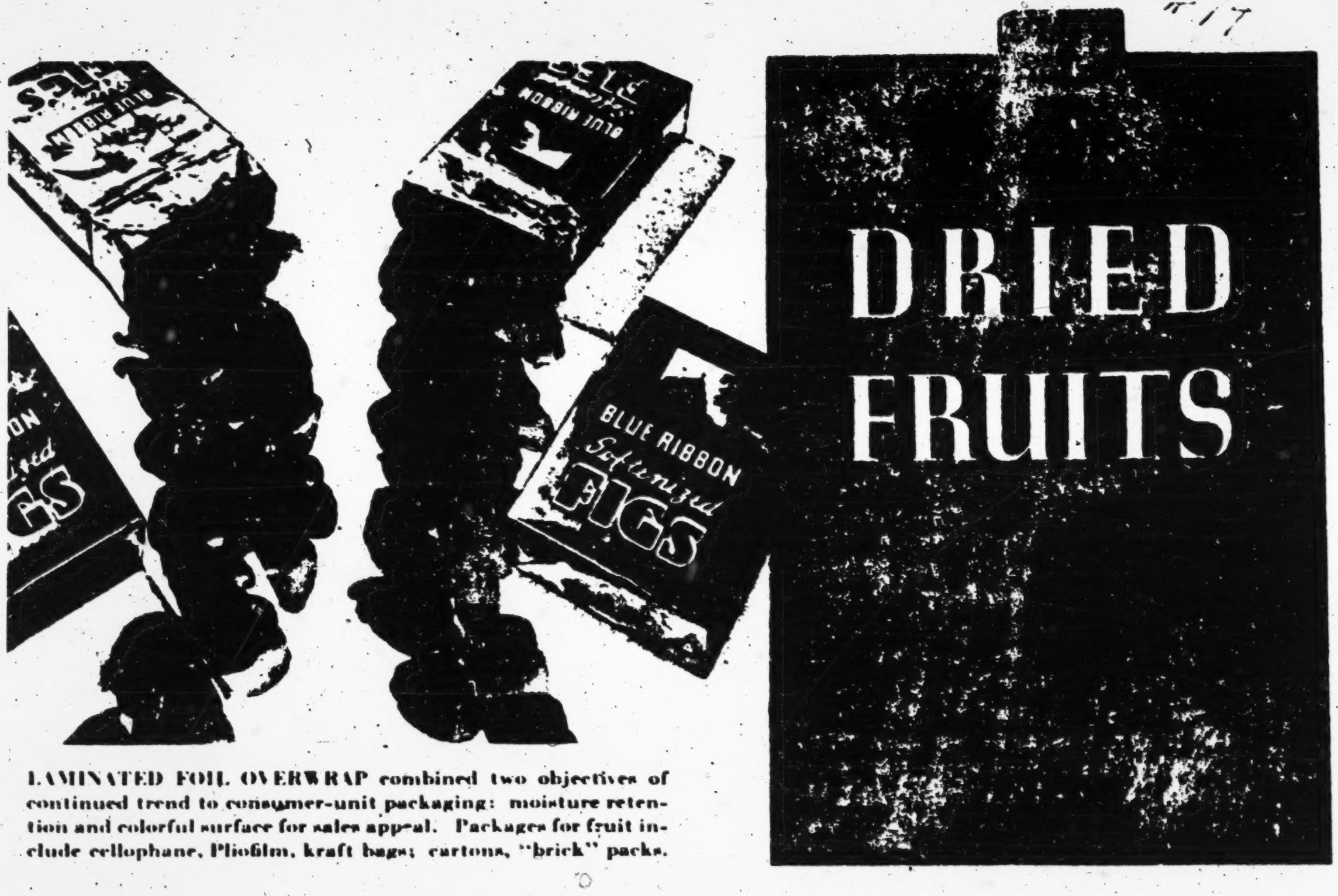
Prior to the war domestic sales of dried fruits by the grocery trade were still largely in the cracker-barrel stage. Only about 10% of sales to grocers by West Coast packers was in consumer-package form. Some quantities were packaged in consumer units for retail sale by market repackers and retailers who originally purchased the fruit in bulk. The remainder of domestic sales was principally sold in 25- and 30-lb. bulk packs to the grocery trade and industrial users such as bakers and confectioners. Today, the trend away from the bulk pack is pronounced.

Approximately 65% of California raisins are still sold in 25-lb. bulk packages, consisting of corrugated cartons and wooden boxes, and the remainder in various types of consumer packages. Principal types and sizes of packages used are: 15, 11, 7 and 1¼-oz. cartons; 2- and 4-lb. kraft bags and 2- and 4-lb. cellophane bags. Of these, it is estimated that before the war over 75% of all raisins sold to consumers went to market in plain kraft bags. Since 1941, however, the carton packs have made substantial increases despite continued shortages of automatic packaging equipment. In 1944 several firms began securing such equipment and the amount of dried fruit packed in cartons since that year increased 25%.

The principal consumer packages for prunes are 1- and 2-lb. cartons usually triple-ply with liner, chipboard and overwrap—and kraft bags. A considerable quantity of specially treated papers, latex-base films and foils are used as liners or primary containers in conjunction with cartons in order to reduce moisture loss and prevent insect infestation.

Cut fruits such as peaches, pears and apricots are packed principally in 11-oz. to 1-lb. cartons with inner and outer wraps. Some of these fruits are also put up in cellophane, Pliofilm and kraft bags and in "brick"

Defendant's Exhibit No. 169



LAMINATED FOIL OVERWRAP combined two objectives of continued trend to consumer-unit packaging: moisture retention and colorful surface for sales appeal. Packages for fruit include cellophane, Pliofilm, kraft bags; cartons, "brick" packs.

built our story here around protection plus possible visibility, toward the use of M.T. Cellophane for wrapping cartons of cereal. Especially the hotel size for Gulf Coast markets. Related Wrigley experience and results also told of our own tests on cereals in M.T. versus Wax Paper. Used their own successful use of window box on Wholewheat Biscuits to prove that Cellophane did command better display position and thereby gained sales advantage. Both listened interest-

Date of last Prod. Call	Rec'd at District Office	Date Typed	(Sec for Below)
	10-25-33	10-25-33	

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

edly and admitted the story had merit but one thing and only one thing put Cellophane out of the picture cost. They admit the Gulf Coast markets are a serious problem to them and that they are constantly striving to improve the protection factor for their foods in this market. To this end they have recently adopted a wax glassine overwrap for these units going into this market. This is going to throw our test on Kelloggs packages off as the units we have under test are not their representative units today.

Adams and Freeman both say they are not working on a new type opener package but admit that they receive about an average of 30 ideas a week on the subject of new methods of packaging, embodying an easy opening method. Their statement to me is that they are satisfied with the present unit. In meeting the cost objection we pointed out that now above all times was perhaps the best time to seriously consider M.T. Cellophane on their carton line, especially the hotel size, as they admit new price structures are in the making, due to processing taxes. Price increases being inevitable and placing competition on a more even footing will place additional burden on selling. They readily admit all this however are not willing to get excited over Cellophane as a carton wrap.

They are interested in our tests and want to know the results as compared to the present unit being marketed in the South. Steps will be taken to get this comparison at the earliest date possible. They say 6% moisture content is a rubbery food. It starts just over 2%. Special note to C.F.B. We were unable to confirm the subject matter of your letter dated 10-18-33. My opinion is that your informant is confused with Glassine and Cellophane.

est-wrap on some new product they are considering similiar to a soup-mix-they insisted they were not yet in position to tell us what this product is-however we will be kept informed (I will find out some way before long) It will not be ready for market until Spring and it will be in 300 MST.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made, including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

1 None

2. Indef.

3. A. Kix in 300 M.S.T.

B. Re-stated story on protection of restaurant size kix with samples in 300 MST and in present wax-emphasizing low costs for much better protection.

C. Interest-kept samples-promise to consider.

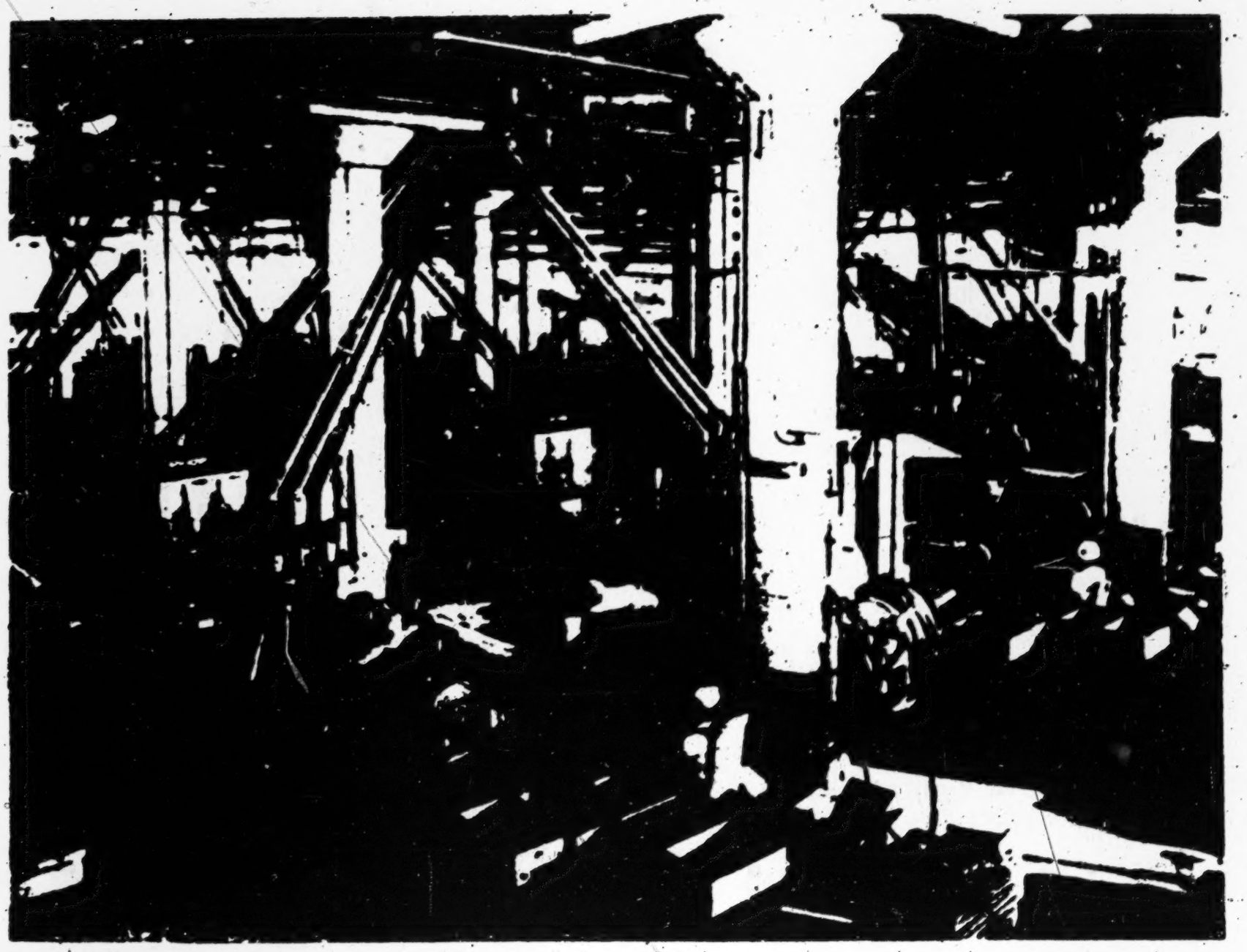
4. Follow along same lines with similar presentations to other members of the firm-keep in touch with new products.

5. None.

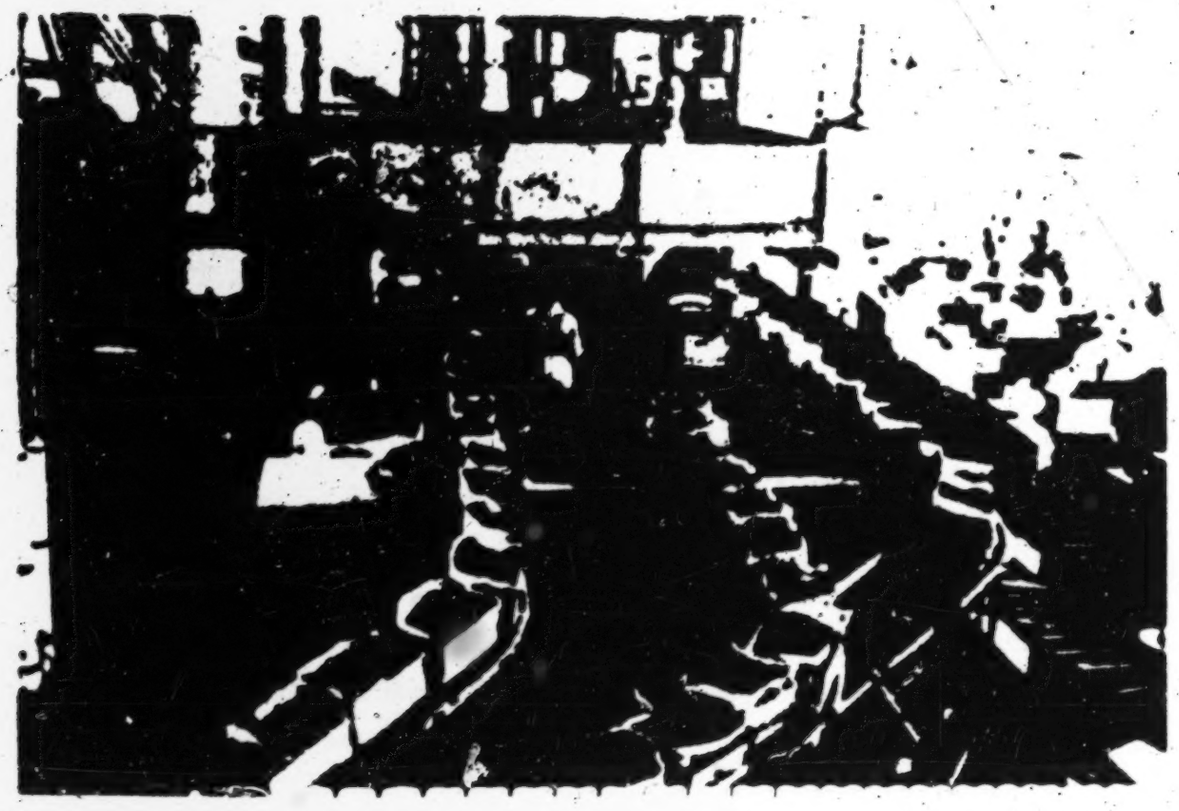
3-7 41	P	Nelson. Are considering putting out dehydrated vegetables. Arranged for convertor salesman to be there and gave them costs on P.T. bags, etc. as well as possible tray units over wrapped in 450 P.T. Decision will come later.
3-14 41	S	Nelson. Again figured costs for small cartons Expect they can get going in about a month.

M 5335

OVER



AUTOMATIC PACKAGING has made big strides—but much more is needed. This is the packaging floor of Sun-Maid Raisin Growers, Fresno, showing a battery of automatic weighing, packaging and check-weighing units for 15-oz. raisin cartons.



cently carton packs with foil overwraps have been introduced with considerable success.

Fifty per cent of the date crop in California is put up in consumer packages by packers in the producing area. An additional 15% is packed by repackers and retailers who do their own packaging. The major packs for the grocery trade are an 8-oz. cellophane-wrapped carton, an 8-oz. cellophane bag and a 14-oz. cellophane-wrapped berry basket. Fancy packs used largely in department stores for sale as gift packs consist of a 3-lb. tin, 3-lb. lithographed carton and 14-oz. layered cellophane-wrapped tray.

Various assorted packs of dried fruits for gift sales are put up by commercial repackers in major cities. These consist mainly of 1-to-3-lb. layered cellophane-wrapped

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
BUDGET PACK, INC.	J. E. CLARK	12-16-47

ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
3140 E. Pico Blvd.	1-13-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Los Angeles 23, Calif.	1-12	D.F., F.U., Candy, N & M

~~D. J. Smith~~ ~~W. Hanta~~ ~~Hunter~~ ~~L~~

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT ZPCO	22 M	Celanese	Trans	CA	0			
Milprint		Sylvania	Oneida	M. T.	5 M			
Shellmar	45 M	Goodyear	Rubber	Rubber	10 M			

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
Harry Levine	P.M.	X		
Sam Gimpel	P.A.	X		

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Dried Beans	200 M	450 MST-52	C&R	300 M
Dried Fruit	60 M	Rubber	R	80 M
Candy	45 M			60 M
Mac & Noodles	20 M	300 PT 450 MST-53	C	25 M
2-12-48 MR				
2-18-48 MR				
TOTAL	325 M			465 M

12727—REV. 11-47 • R-ROLLS S-SHEETS C-CONVERTED

RETURN TO "CELLOPHANE" TRADE ANALYSIS

1.(a). Competition.
(b). Use of D.W. 300 MST-53 vs. single wall 450 MST-53.

2.(a). Competition:
CA has discontinued on brick type package of dried fruit because film smudged too much - switched to rubber film.

MT would like to discontinue Oneida source and will when film is available for them to make their own bags.

Rubber using on all dried fruit packages - using approximately 10 M lbs. this quarter - because he found too much smudging on MST52 and PT bags.

(b). Has switched to single wall 450 MST-52(using MST52 because it printe better than MST53.

3. Studying possibility of discontinuing all printed bags because of costs. This will have to wait until film is available and when done it will be done gradually.

M 5337

Defendant's Exhibit No. 167

DU PONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
CALAVO GROWERS OF CALIFORNIA	I. S. GARDINER	5-13-48
ST. AND NO. 4803 Everett Avenue	DATE 7-26-48	CONTROLLED BY / PURCHASING AUTHORITY
CITY-ZONE-STATE Los Angeles 11, Calif	CLASS 1-12	INDUSTRY Fresh Prod. De. Fruits.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	Goodyear	Goodyear				8M	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
O. Collins	P. A.			X
C. A. Parmenter	Pers.Mgr	X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
9-15-48 ltr.				
TOTAL				

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. a- Dates - Tray overwrap 300 LST-- Bags LST.

2. In Collin's absences talked to Parmenter who until recently handled packaging materials. He says A & P, their largest customer, demands Pliofilm and they will be f forced to use it. This means probable shift to rubber on most of their production.

They favor du Pont Cellophane from all standpoints, cost, production speed, clarity etc., but say they feel "war is over" and customer is king.

After some discussion they agreed to re-consider before definitely committing themselves. We will contact again after Collins return.

3. Order from A & P amounts to 25 carloads of dates.

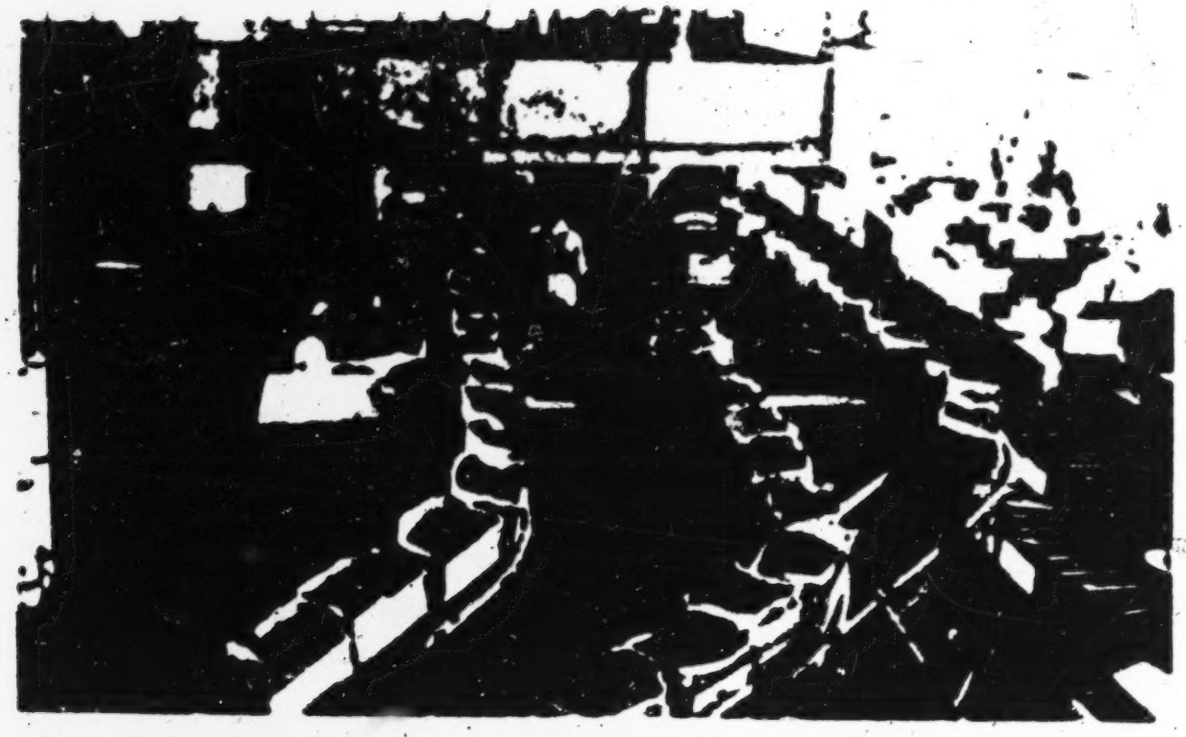
JUL 29 1948

M 5340

Defendant's Exhibit No. 168

4492

342



BULK PACKAGE of 25 lbs. still accounts for 63% of California raisin pack and is important for bakery and institutional use. Sun-Maid uses a corrugated carton with liner, handled on automatic bulk packaging and weighing equipment.

packs employing a paperboard base and cellophane overwrap.

Dried figs, of which the tonnage is divided about equally between 30-lb. bulk packs and consumer packages, are largely marketed to the grocery trade in packaged form.

At the present time quite a large volume of dried packaged figs is going out in cellophane packs of various sizes. These range from a 6-oz. to a 1-lb. brick pack, the most popular of which is the 8-oz. pack. In addition, attractive 3- and 5-lb. wooden trays of jumbo pulled Calimyrna figs are packed for holiday gifts. Introduced with considerable success.

Fifty per cent of the date crop in California is put up in consumer packages by packers in the producing area. An additional 15% is packed by repackers and retailers who do their own packaging. The major packs for the grocery trade are an 8-oz. cellophane-wrapped carton, an 8-oz. cellophane bag and a 14-oz. cellophane-wrapped berry basket. Fancy packs used largely in department stores for sale as gift packs consist of a 3-lb. tin, 3-lb. lithographed carton and 14-oz. layered cellophane-wrapped tray.

Various assorted packs of dried fruits for gift sales are put up by commercial repackers in major cities. These consist mainly of 1-to-3-lb. layered cellophane-wrapped wooden and paperboard boxes.

Practically all dried apples are sold in 10-, 15-, 25- and 50-lb. bulk packs to bakers, processors and institutional users. Prior to the war, some firms produced 4-, 8-, 10-oz. and 1-lb. cellophane packs. However, volume was small and the war terminated such packs. Some dried apples are now being sold in packaged form in combination with packages of flour for making apple pies, such as General Mills Pyequick product.

Packaging operations in the dried fruit industry range from complete hand packaging to fully automatic lines employing the most modern equipment for automatic weighing, filling, sealing and wrapping. Machinery has been difficult to obtain and much of it, the packers say, is too slow for volume operations. Consequently, many packers have retained hand filling and packing methods until appropriate equipment fully meeting their requirements is developed and available. Dried fruits are an obvious item for completely automatic packaging

M 5341

and it is expected that the shift from bulk to packaged goods will be greatly accelerated when automatic equipment is more readily available.

Dried fruits require a package that is moistureproof, waterproof and verminproof and that can be hermetically sealed by heat sealing. The natural fruit syrup must be retained in the product without leaking through the package. In addition, dried fruit packers, recognizing the merchandising values of packaged goods, desire a package with sales appeal which will successfully compete with other packaged foods in the retail store.

Toward these ends, several new packages have been developed for dried fruits since the end of the war. One of the most significant of these, an all-paper machine-made pack with exceptional moisture-retention qualities, adopted by the Richmond-Chase Co., was described in the article "Moisture Locked In" in MODERN PACKAGING for March, 1948.

The moisture-retention features of Pliofilm have been utilized by packers as liners for cartons and bags and as bags alone. Attractively printed in colors, some with a cut-out window and carrying the packer's sales message, the new bags are a startling contrast to the drab kraft bags formerly used.

A number of new types of cartons are being used, some of them top and bottom sealed with waxed manila-board interiors in place of the conventional end-lock cartons. Cartons are being overwrapped with foil, transparent films, waxed paper and other materials in order to retain moisture.

Efforts are being made in the industry to develop freer-flowing packs. Wax-coated cartons are being used for raisins to prevent the collection of residue in the package and to give the consumer a freer flowing of the product after the package is opened. The fig industry is developing a "flow" pack to supplement or eventually replace the brick or layer type of pack.

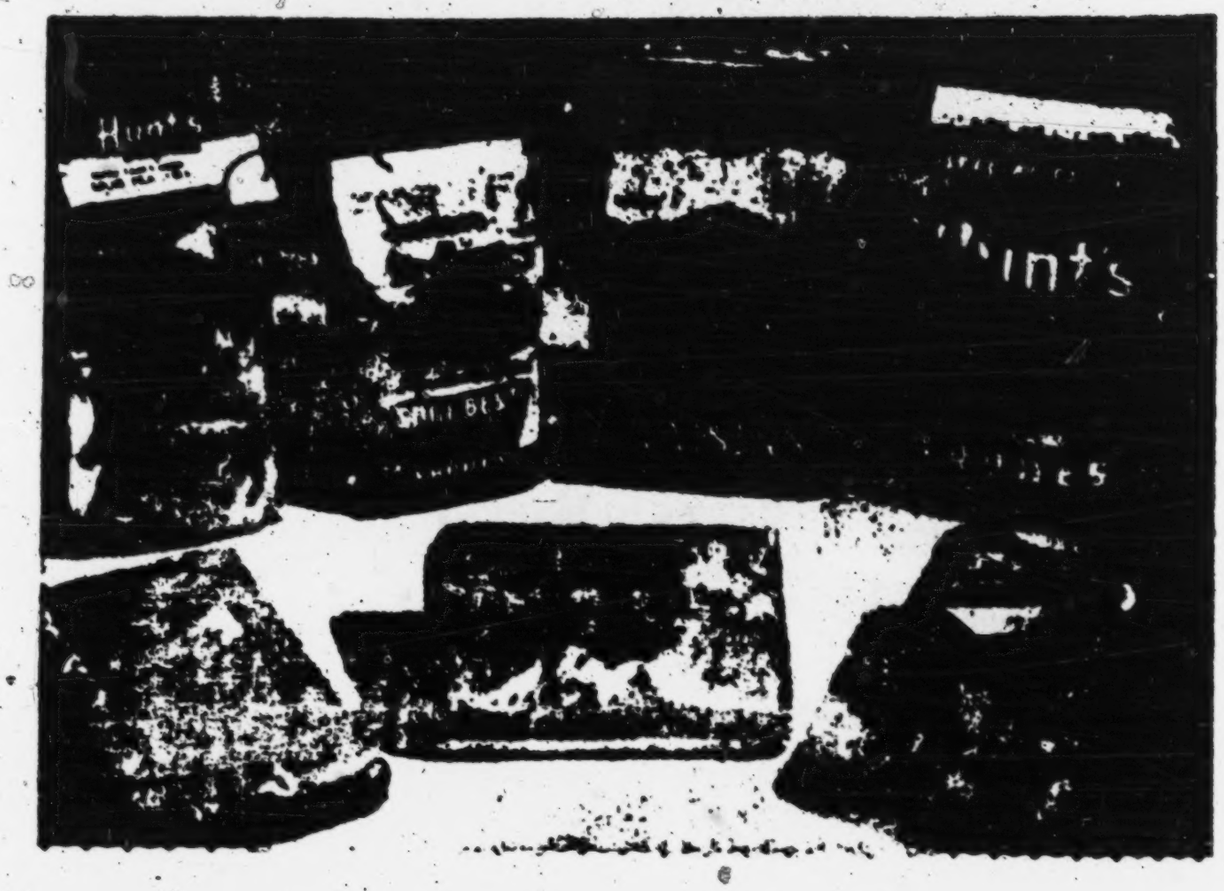
A novel, well-conceived packaging program indicative of the type of packages and equipment required to [illegible] dried fruits successfully is found in the enjoin-

size holding 10 packages, designed for cigar-and candy-counter sales.

Two packaging lines are used, one for the 15-oz. pack and the other for the 1¹ ₈-oz. carton. Both are automatic, continuously operating lines. For the larger package, a carton feeder and bottom sealer opens the cartons and seals the bottom flaps at a speed of from 60 to 100 cartons per minute. A six-scale automatic net weigher and filler is used; the top flaps are sealed and the carton is overwrapped by a wrapping machine. The 1¹/₈-oz. cartons also are set up, filled and wrapped all completely automatically.

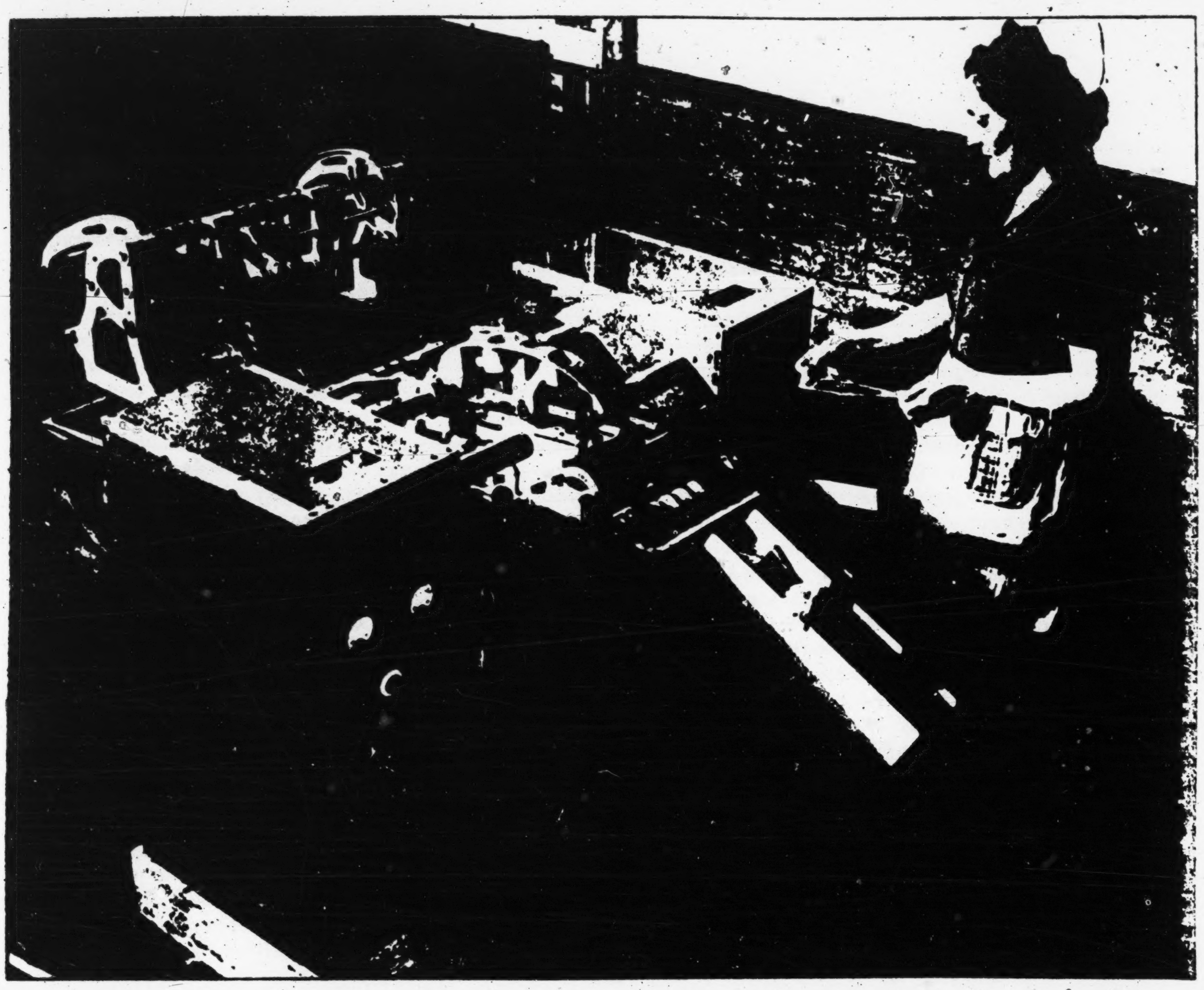
With its billion pounds of product, now only one-third packaged, the dried fruit industry's requirements for packaging in the form of machinery, cartons, film, foil and paper products can easily double in the next five years, observers predict.

PLIOFILM, because it retains moisture, is increasingly important in many types of dried fruit packaging—as a straight bag or wrap, or as a laminant in bags, with or without windows.



Defendant's Exhibit No. 170

CALPAK is now using Space keys like these for its Dessert, Sugar Drop and Highland prunes



Calpak Makes Its Own Saran Bags On Machine Equipped With Electronic Sealing Devices

PRODUCING 55 Saran bags a minute at Calpak's Plant 51, the modified Simplex bag making machine above removed the last obstacle barring adoption of Saran film for dried fruit packaging. Generators flanking it provide 27 million cycle high frequency current which electronically welds Dow's plastic film along the back and bottom seams of the bag. Close-ups below show sealing electrodes raised with plugs detached from generators (left) and unit operating (right). Saran bags will be available also from convertors.

shrink away from a bond under prolonged application of heat. Sealing Saran bags after filling has posed no problem, thanks to the use of thermoplastic-coated tent labels which fold over the front and back of the bag top, and sealing units such as the Chaffee Rotor-Sealer.

This problem was solved. Saran bags are being made today at Calpak's Plant 51 in San Jose, California. The pilot model of this Saran bag making machine was developed by Simplex Packaging Machinery Inc. of Oakland and Electronic Processes Corporation of San Jose, in cooperation with Dow engineers.

This unit is a modified version of the familiar Simplex High Speed Automatic Bag Making Machine. It produces finished bags from flat rolls of Saran 100 gauge film, sealing the bag seams on the bottom and back electronically — so swiftly that the weld is completed before the film can possibly shrink or distort. Similar machines will be produced by Simplex for other packers desiring to make their own Saran bags. It is also understood that at least two major convertors are now preparing to produce and sell Saran bags for the dried fruit industry and other users.

Saran's acceptance by Calpak for dried fruit packaging has paralleled closely its introduction not long ago to the meat industry by Chicago's famous Oscar Mayer firm. "All along," says

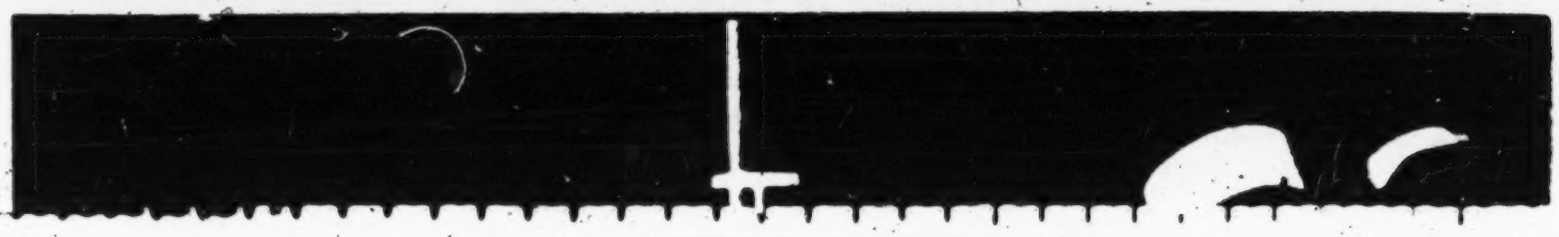
with us that could make these features profitable for its dried fruit packaging. In order to win acceptance, Saran not only had to be 'good,' it had to be 'better.' We appreciate Calpak's cooperation in solving the problems incident to adapting Saran for this market."

Calpak's original experiments with Saran began in 1947 when it was experiencing difficulty with some films in extremely cold climates, where low temperatures would cause the films to become brittle and more susceptible to breakage. In this regard—a film which would not grow brittle when cold — Saran proved more than adequate. Market tests have shown Calpak that this flexibility factor is important from a sales viewpoint as well as from the protection aspect. One of the most important considerations of a consumer in purchasing dried fruits, the company has found, is whether or not the fruit is soft to her touch. Calpak says Saran maintains the softness of the fruit for a "satisfactory period of time" by not allowing its moisture content to escape and, additionally, has a soft, velvety quality in itself that promotes the package's "feel appeal." Other Calpak tests with Saran have shown a retarding of deteriorating agents which attack prunes.

More than two years passed after experiments were started before Calpak was able to swing into production on the packaging of its prunes in Saran bags. Much of this time was spent in modification, tooling, coordinating and testing the machinery with which to produce the bags. According to Dow, the Simplex machine was chosen as the logical basic manufacturing unit of the bags for two reasons. First, its action is reciprocal, which makes it suitable for bar-type electronic sealing. Next, its maker was already established in the field, which made service and repairs readily available to dried fruit packers. Simplex and Dow technicians worked with representatives of several firms making sealing devices based on the electronic principle. The one which is now in use by Calpak as an integral, coordinated part of its Saran bag maker is made by Electronic Processes Corporation of San Jose.

Calpak is now making Saran bags on this modified "Simplex Electronic" unit at a "cruising" speed of 55 bags per minute, although it is capable of some added production. This unit forms a gusset type bag tube from flat roll-fed Saran, seals the back seam, cuts off a section of the required bag length, folds up the bottom and seals it. Only

(Continued on Page 40)



CALPAK ADOPTS SARAN

(Continued from Page 13).

basic differences from a standard Simplex unit are the electronic sealing bars themselves and the two high frequency generators connected to them.

Don't let that word "electronic" frighten you. As G. W. Blessing of Electronic Processes Corporation explains it, electronic sealing is a comparatively simple procedure. Macerials heat internally when you pass electrical energy through them. Ordinary household current frequency is suitable for heating good conductors, such as metal, but plastics are poor conductors at this frequency. Poor conductors, however, become good ones at high frequency.

"Our 'Ectrotherm' high frequency generators merely change ordinary 60 cycle A.C. power into frequency of over 27 million cycles," Blessing says. Timed carefully to coordinate with the action of the Simplex machine, this energy is channeled from one electrode or bar through the plastic to another bar for sealing purposes. Used for Saran film on the Simplex, this electronic weld is made along a very narrow line in one-fifth of a second.

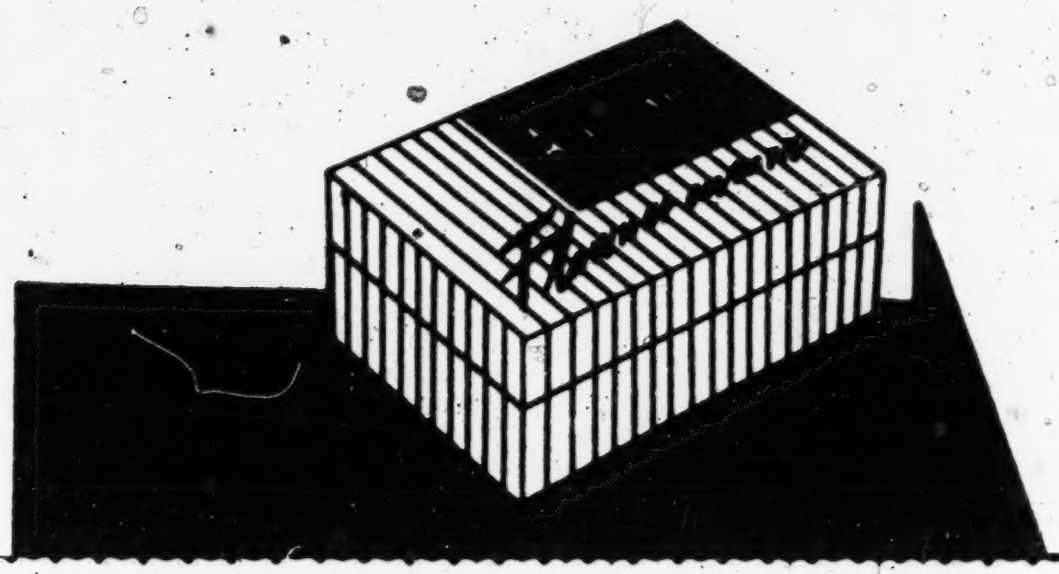
"Since the heat is instantaneous—on and off like a light—we provide for a fraction of a second of 'dwell' under pressure after the heat flash. The electrodes remain cool, so this post-weld dwell sets up the welded section into a firm bond. Intensity of this internal heat is precise," Blessing adds, "so that Saran and other plastics having critical melting points are easily welded, where ordinary external heat sealing would be slow, even if it could be controlled."

Calpak makes its Saran bags in both one and two pound sizes and is currently using them for its Sugar Drop, Dessert, and Highland brand prunes. In closing the bags after filling, operators fold thermoplastic tent labels made by H. S. Crocker Co., Inc., over the bag tops. Bag and label are then conveyed through one of Calpak's Chaffee Rotor-Sealers, made by Ralph Chaffee & Co., for final closure. The Chaffee sealer transmits heat through a moving, heated metal belt. This permits conveying of the package through the entire sealing unit, plus subjection of the bag and bag top to predetermined pressure heating and cooling under continuous pressure. A code-date is then automatically printed on the back of the label and the filled and sealed bag is cased.

★

Louis Traung

LITHOGRAPHY'S LOUIS



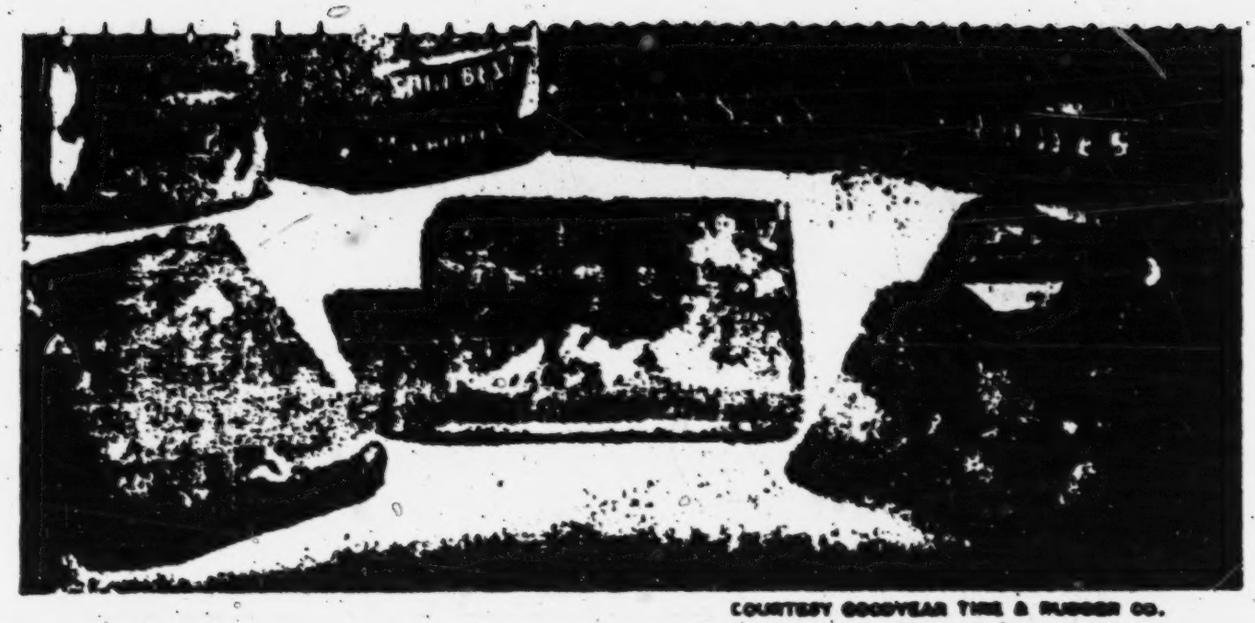
Efforts are being made in the industry to develop freer-flowing packs. Wax-coated cartons are being used for raisins to prevent the collection of residue in the package and to give the consumer a freer flowing of the product after the package is opened. The fig industry is developing a "flow" pack to supplement or eventually replace the brick or layer type of pack.

A novel, well-conceived packaging program indicative of the type of packages and equipment required to package dried fruits successfully is found in the raisin-packaging operations at the plant of Fewel Bros. Co., Fresno, Calif.

Recognizing the need for a protective package capable of delivering raisins to the consumer in perfect condition and at the same time possessing consumer appeal, Fewel Bros. developed two packages. The first, a 15-oz. package overwrapped with either colorfully printed foil containing a natural-color reproduction of raisins in a "shamrock" cut-out the firm's trademark or cellophane also printed with a full-color photograph of the product.

The second type of package is a 1½-oz. package which conforms in shape and size to a package of cigarettes. Attractively printed with the shamrock trademark and green, yellow and red colors, the package is overwrapped with a clear, moistureproof cellophane with a tear tape. This package is sold from two display cartons: one, a 24-pack display carton for grocers' shelves and display cases; the other of cigarette-carton

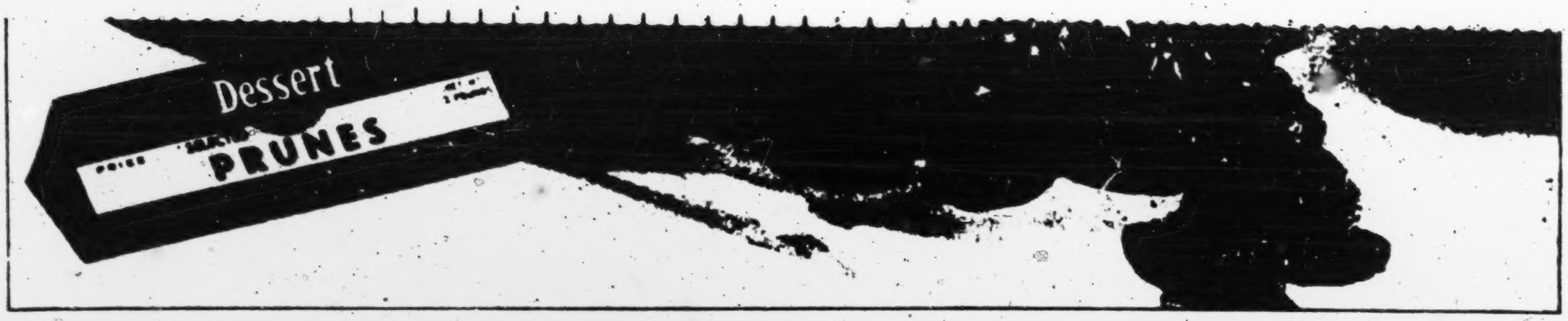
M 5341



COURTESY GOODYEAR TIRE & RUBBER CO.

NEW EQUIPMENT which the dried fruit industry welcomes is exemplified by this continuous rotary heat sealer designed to seal Plio-film bags at the rate of 296 in. per minute, shown in use at the California Packing Corp.

PHOTO COURTESY RALPH CHAPPELL & CO.



CALPAK is now using Saran bags like these for its Dessert, Sugar Drop and Highland prunes.

CALPAK ADOPTS SARAN FILM FOR PRUNES

Decision Follows Two Years Of Experiments And Bag Machine Development

CALIFORNIA Packing Corporation, one of the leaders of the U. S. dried fruit industry, is adding another "first" to its laurels with an important new packaging material. Word of this action--and the reasons behind it --will interest dried fruit packers everywhere.

The news came this month with Calpak's announcement that it will use bags made of Saran film for its current prune production going into transparent packages. Before launching this program, Calpak exhaustively tested the flexibility, carrying qualities and moisture vapor transmission of this Dow Chemical Company film—never before used commercially for dried fruit packaging—and was favorably impressed with results.

One major problem remained, however, before Saran-packaging of Calpak prunes could begin: namely, the lack of available fabrication equipment. Saran cannot be sealed effectively on bag making machines using the usual heat-seal method, because the unsupported film has a tendency to

Good Packaging
DECEMBER, 1949

'Good Packaging'

M 5342

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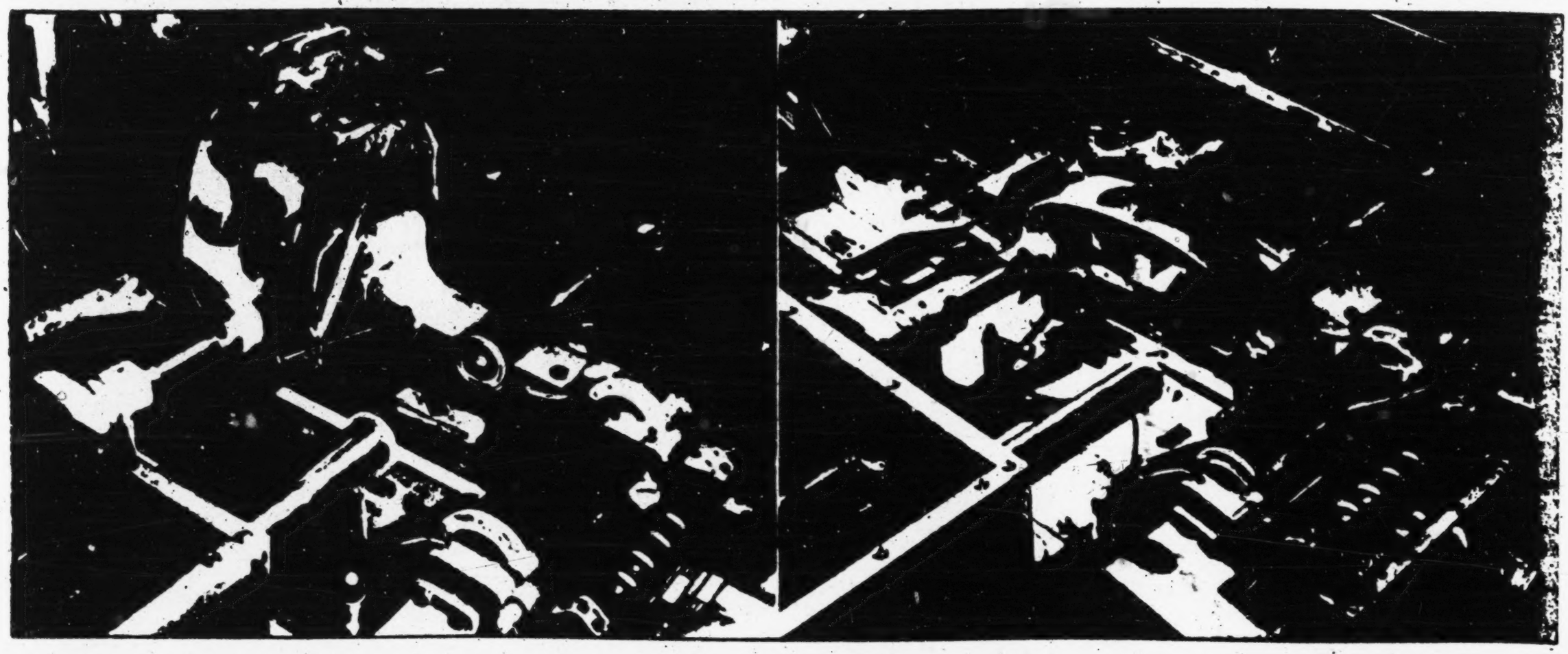
PRODUCING 55 Saran bags a minute at Calpak's Plant 51, the modified Simplex bag making machine above removed the last obstacle barring adoption of Saran film for dried fruit packaging. Generators flanking it provide 27 million cycle high frequency current which electronically welds Dow's plastic film along the back and bottom seams of the bag. Close-ups below show sealing electrodes raised with plugs detached from generators (left) and unit operating (right). Saran bags will be available also from convertors.



D.C. 1671

M5342

... desiring to make their own Saran bags. It is also understood that at least two major converters are now preparing to produce and sell Saran bags for the dried fruit industry and other users.

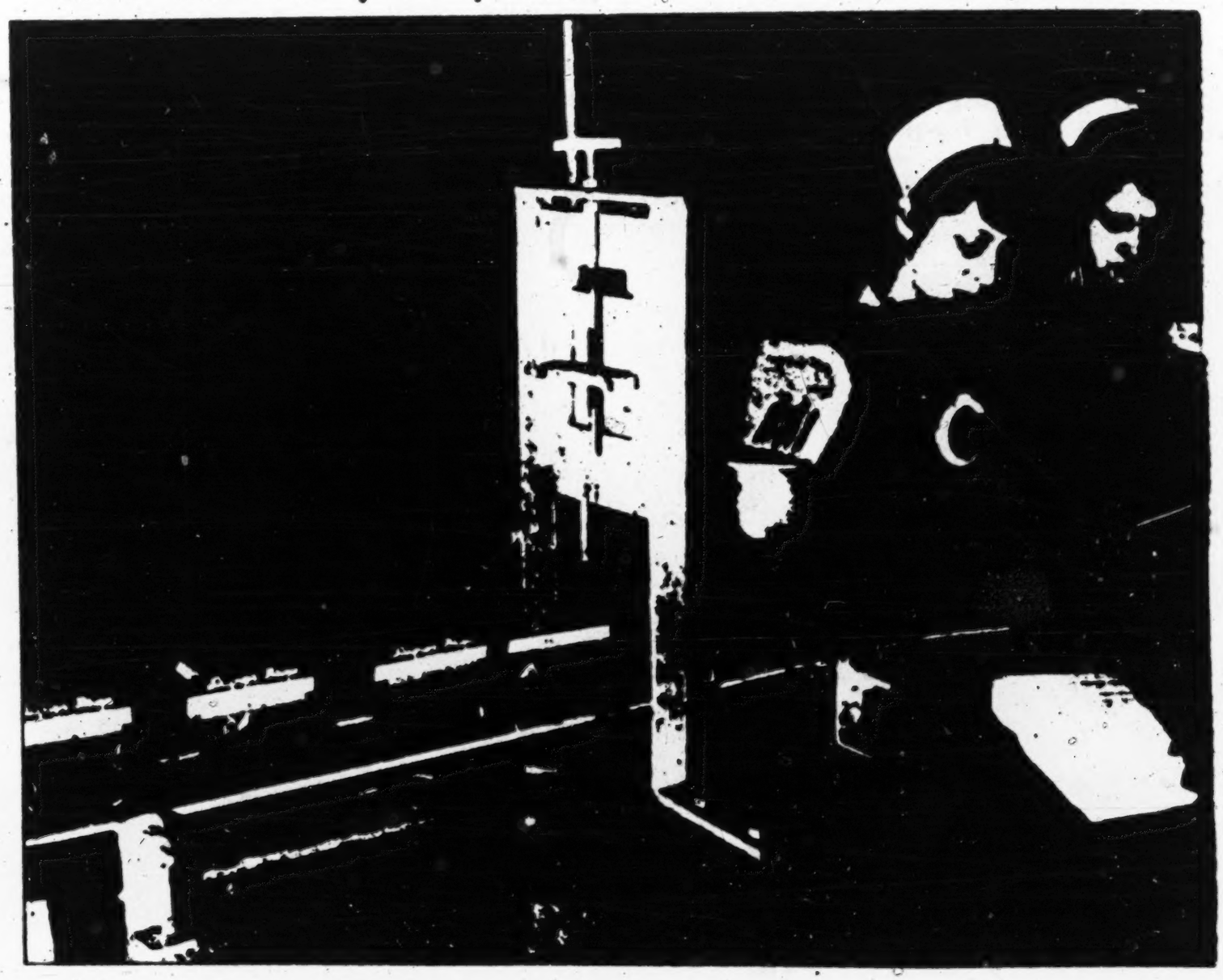
Saran's acceptance by Calpak for dried fruit packaging has paralleled closely its introduction not long ago to the meat industry by Chicago's famous Oscar Mayer firm. "All along," says R. J. Minbiole of Dow's Packaging Division, "we have preferred to creep before we walked. By that I mean tackling specific industry applications of Saran from within a single firm in that field — solving problems as they arose until we were satisfied that it could be generally adopted by anyone in the industry. In Calpak —like Oscar Mayer—we found a firm sufficiently interested in Saran's protective and sales appeal features to enter into experimental and actual production work

...ture by not allowing its moisture content to escape and, additionally, has a soft, velvety quality in itself that promotes the package's "feel appeal." Other Calpak tests with Saran have shown a retarding of deteriorating agents which attack prunes.

More than two years passed

...speed of 35 bags per minute, although it is capable of some added production. This unit forms a gusset type bag tube from flat roll-fed Saran, seals the back seam, cuts off a section of the required bag length, folds up the bottom and seals it. Only

(Continued on Page 40)



★

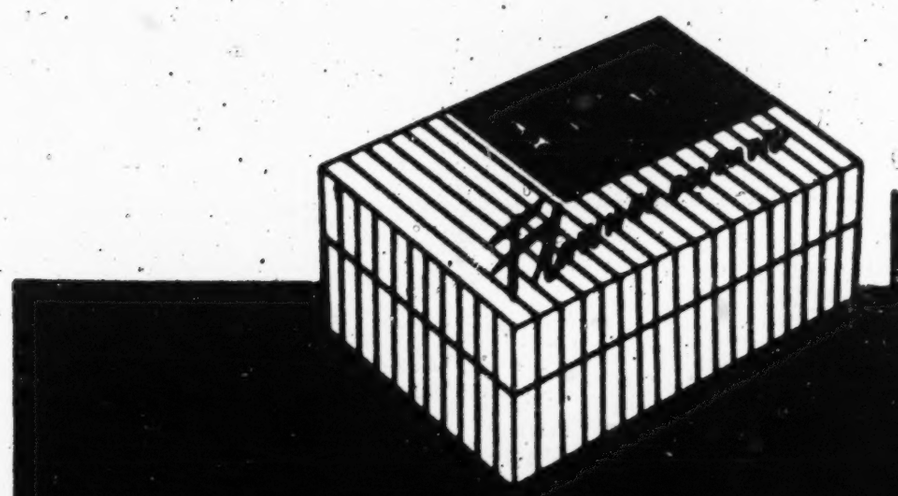
CHAFFEE Rotor-Sealer at right, familiar sight in dried fruit plants, effectively seals thermoplastic Crocker tent labels on Calpak's Saran bags. Firm uses Saran for both one and two-pound bags.

'Food Packaging'

M5342

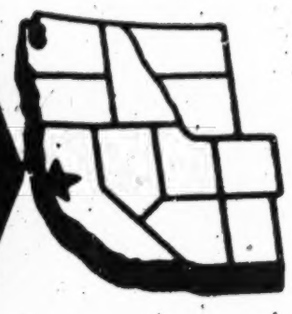
frequency of over 2½ million cycles." Blessing says. Timed care-

m both one and two pound sizes and is currently using them for



SET-UP BOXES

Centered for Service in the West



Firms in every line praise Acme's complete packaging service. They know they can depend on our knowledge of the competitive merchandising conditions of the Western market, our designing know how. Specialists in color printing. Complete designing service. Strategically located in the growing San Francisco Bay Area.

ACME PAPER BOX COMPANY
MAKERS OF SET-UP BOXES
879 THIRD STREET, SAN FRANCISCO 7
SU TER 1-2936 • OLYMPIC 2-8855

Louis Traung

LITHOGRAPHY'S LOUIS TRAUNG DIES AT 83

DEATH came last month in San Francisco to Louis Traung, mechanical genius of lithography's famous Traung twins.

Born in San Francisco's South of the Slot district July 11, 1866, Charles and Louis Traung truly grew with the West. When only 13 years old, they entered the industry in which they were to become famous, hired by Max Schmidt, then owner of M. Schmidt & Co.

The brothers left Schmidt in 1911 to found their own concern, the Traung Label and Lithograph Company of San Francisco. Charles promptly proved his worth in the sales end of the

Dec. 1940

M5342

Cellophane Interim Trade Report - TRADE ANALYSIS COPY

Customer: Kraft Cheese Co.
St. and No.: 500 Peshtigo Court
City - State: Chicago, Ill.

Salesman: R. R. Smith
Date: 6-12-45
Date Last Report:
Industry: Cheese
Class: 1-12
First Call ☐
Affiliation: National Dairies
Agreement Expires:
W☐ R☐

DU PONT CELLOPHANE SUPPLIER	PUR. THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THRU	P.T., M.T., CA, ETC.	1st QTR. PUR.*	2nd QTR. PUR.*	3rd QTR. PUR.*	4th QTR. PUR.*
DU PONT	5 M	Syl.	Reynolds	MAT	5 M	3 M		
Marathon Shellmar	330 M	Reynolds	Same	Foil *				
Reynolds					Phila. Cream Cheese - see below			

* Give estimates thru this calendar quarter. Revise previous estimates if necessary.

RETURN TO "CELLOPHANE" TRADE ANALYSIS

NEW BUSINESS

1. Persons Interviewed and Titles.
2. Accomplishments—(new items, supplier, type of material, annual [illegible] of customer.
3. Report of Call—Show items worked on and/or competitive work and results.
4. Action Needed—by (a) District Office, (b) Home Office.

1. Frank Wilcox; Frank Holtz

3. Parkay -(testing program) Not yet ready to test- will be shortly - this overwrap and consideration being given for p/w. as Kraft are anxious, along with others, to hold the position they have gained during war.

Films submitted for test are following:

300 MST-54
450 PT
300 LST

Natural Cheese. Not yet ready to check new films sent by Technical Section as they never arrived - checking with C. L. Blair. Will follow.

Phila. Cream Cheese - foil comp. Checked as per W. J. Harte letter on status. Facts substantially same as reported in May M. R.

1. Are using some foil at 2 points of mfg.: Phila., Pa. and Atlanta, Ga.

R12727

ESTABLISHED BUSINESS

5. Competitive Information.
6. Sales Status—Explain reason for any important change in customer's purchases.
7. Success Stories.
8. Inventory—in terms of weeks' supply.
9. Service Work.
10. Mailing List Changes (if any).

2. Reasons are as follows:
   a. Trouble with mold
   b. Possibility of getting comparable facts on foil vs cellophane.

3. There are 2 schools of thought in Kraft organization on foil vs cellophane. One is somewhat "tradition bound" feeling foil is traditional pkg.; also fact that mold development of a slight nature cannot be seen. The other school argues that cellophane has better salability and permits closer quality control as any slight tendency to mold can be seen and the pkg. removed by the servicing salesman. Latter seems more logical to Kraft's quality standards.

Our suggestion was that no comparable facts could be gathered on salability of foil vs cellophane while cheese is rationed and food short - that cellophane should certainly be continued well into the p.w. era so an accurate determination could be made.

Holtz informed us this would be done. There is no current thinking to eliminate cellophane.

M 5-60

4500

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Defendant's Exhibit No. 171

DU PONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Albers Super Markets, Inc.	V. N. Peterson	9-30-48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
Mitchell & B & O RR	10-27-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Cincinnati, Ohio	1-12	Food

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	35 M	Goodyear	direct	Pliofilm	0	0	0	3 M
Conv.	2 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT. VD	MAIL TO	M. L. CHGE
E. J. Adolph	Buyer	x		
Nelson Ruddy	Meat Mgr.	x		
Harold Bur	Dairy	x		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT, ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-12727—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. Check activity

2. s. s. meat - are continuing expansion of this operation. Now have 8-100% operations. In our opinion, they need a lot of improvement in their operations, but in their opinion they are the best in the country. This being the case, it is a little difficult to call attention to their faults.

Cheese - have had Sperti, Inc. run tests on various wraps for cheese. The factors they were most interested in were moisture protection and ultra violet ray transmission of the films.

They are retarding mold growth by passing the packaged cheese thru a tunnel of ultra violet lamps.

The tests' results showed that pliofilm had a better ray transmission rate and gave better moisture protection than cellophane. The pliofilm used was comparable in cost to cellophane. Based on these findings, Albers will package cheese in pliofilm in the future and will discontinue the use of cellophane for this purpose.

11-16-48 N

M 5344

DU PONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: THE GREAT A & P TEA COMPANY - Central Div.

SALESMAN: J. D. Rankin

DATE LAST REPORT: 6/6/49

ST. AND NO.: 3440 Forbes Street

CITY-ZONE-STATE: Pittsburgh, Pa.

Headquarters

CLASS

CONTROLLED BY PURCHASING AUTHORITY

INDUSTRY

D. J. Baker

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

R[illegible] CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

JUN 17 19[illegible]

R-12727 A

* R-ROLLS S-SHEETS C-CONVERTED

Interviewed:

R. L. Pierce, President
W. V. Lyon, Div. Buyer
J. Doherty, Sales Manager
R. E. Wright, Dir. of Operations
R. I. Titus, Meat Specialist
Mr. Nichols, Meat Specialist
H. D. Walworth, Produce Div. Sales
C. Baum, Div. Mgr. - Atlantic Comm. Co.
W. H. McKee, Div. Dairy Manager.

- - - - - - - - - - - - - - - - -

1. To present laboratory findings plus market studies on Pliofilm use on cheese vs. cellophane seconds, and review Package Meat Development and program, also progress in produce packaging.

2. DAIRY -- Although laboratory tests show pliofilm better in moistureproof factor than cellophane, we pointed out the difference wasn't measurable from sales angle under 10 days, therefore from practical angle, were equal or nearly so. From a cost angle we were ahead $2.75 per 1-M vs. $2.94 (10x12 sheet vs. rubber 40 gauge roll). Explained economy of sheet vs roll due to exact size used with sheets plus labor of tearing from roll. Market study shows scotch tape used to hold on label -- this adds $1.80 per 1-M units.

M 5345 (cont'd)

4502

352

Defendant's Exhibit No. 173

Detendant's Exhibit No. 174

DU PONT

Cellophane TRADE MARK
TRADE REPORT
(Trade Analysis Copy)

	B	S
SALES COR.	☐	
PROM. SECT.	☐	
SALES SERV.	☐	
ADV. SECT.	☐	
CONV. SECT.	☐	
PROD. DEV.	☐	
SERVICE SECT.	☐	
PLANNING	☐	

Salesman: W. E. Ferry — Date: 12/13/40 — Type Call: P

Firm: Busalacchi Bros. — Date last Call: 10/4/40 — Type Call: P — Date last Prod. Call: — Class: 3-6

St. & No.: 280 Northern Ave. — Bus.: Fish

City & State: So. Boston, Mass. — Controlled by:

Final Decision by (Titles): Peter Busalacchi, Pres. — Contacted this call? yes

Buyer — Contacted this call?

Others Contacted this call (Titles)

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
not using.		

Items in transp. sheeting: (specify which is competitive or converted film)

none.

Other potential products:

fresh and frozen fillets.

a. Sales aids used—specify below:	d. Mailing list changes—below:
b. Latest success story—below:	e. Agreement expires? none
c. Service and general remarks—below:	f. Did you secure order? nc

a.) Photos
Consumer advertisement.

CREATIVE ACTIVITY

Defendant's Exhibit No. 175

NEW WRAPPER Solves Problem For Packers

Thirty companies put meat loaf into "Pliofilm" because it greatly reduces shrinkage and offers other advantages

Close-up of a "Wonder Loaf" packed by Cudahy Bros. Co. in the "Pliofilm Mil-O-Seal" wrapper. More than 30 packing companies are using this packaging material for meat loaves.

CUSTOMER: A & P Tea Co. - Central Div. Headquarters
SALESMAN:
ST AND NO: 3440 Forbes Street
DATE: 6/6/49
CITY-ZONE-STATE: Pittsburgh, Pa.
CLASS:

They would like the savings but put sales and keeping quality first. They were pleasant however, and when we stated we didn't want A & P to use cellophane unless it did A & P some good, they suggested we go to Columbus where cellophane is still being used and if we could show them better performance or equal results, they would gladly go to cellophane. However, they claim "each A&P unit is so sold on Pliofilm for cheese, the converting back to cellophane will be a real job of selling". The buyer was present but had little to say.

ACTION: Go to Columbus with Mr. McKee when he can set a definite date and try to work from here for agreement. Set stage in Columbus 6/7/49 prior to McKee's visit.

The Columbus sales position deteriorated from first to fourth. This takes some edge off our using them as an example.

MEATS -- suggested this Division modernize the 217 partial self-service meat stores as to layout and proper type cellophane used (A&P here is one of our largest self service meat customers). Mr. Titus assigned to Buffalo is setting up specifications and they prefer to wait any action until he is thru. Will depend on the buyer stocking the correct cellophane in warehouse and he states they constantly remind Units of correct usage.

Presented reprint of Nelson Allen's article on Color Change and laboratory tests. Feel this is good step in educational work and wants 25 for supervisors. May want more. (See 5b).

Buffalo 100% store going well -- 1/2 of 1% rewraps (good). Sales up and progress reported. More stores planned on further test s basis. Rochester and Syracuse.

REFRIGERATION -- discussed refrigeration with R. C. Wright (D.O.), its need and need for more information as to how to get it and how to use it. Store surveys show personnel know little regarding temp. of meats on arrival, when cut, wrapped or displayed and how long it takes to get meat below 36 deg. at sales level -- if put in case at a higher temperature.

PRODUCE -- No report on lettuce test. Claims want too much data - not equipped to spend time needed to get this -- "up to Mallison". This shows little sign of cooperation.

M 5345

R-12797-B

DUPONT

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER

SALESMAN

A & P Tea Co. - Central Div. Headquarters

ST AND NO

DATE

3440 Forbes St.,

6/6/49

CITY-ZONE-STATE

CLASS

Pittsburgh, Pa.

Tomatoes in cellophane not perforated -- stressed the need. Discussed store wrap lettuce. Non-committal. Suggested seconds for cut melons. Showed some interest.

BAKERY

Although not on my program, learned that the Central Division is going all out on white bread. Mr. Pierce, President, states "results so far remarkable". What they will be when others follow, we don't know. We feel there is no more bread eaten -- we just get more of the business at present". He was interested in our position to take care of this growth.

5b L. B. Steele -- please send 25 reprints of recent Bulletin on Nelson Allen's article on Packaged Meat and Meat color to Mr. Nichols, above address.

General Sales
please handle

M 5345

CREATIVE ACTIVITY

.G.

1. New items on market since last call—supplier, distribution, annual potential.

2. Result of suggestions made on previous calls.

3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?

4. What is your plan for next call?

5. Action needed by: (a) District Office (b) Headquarters.

1.-2. None.

3. a.) M.T.-34 and label inserts on fillets.

b.) Showed how small the cost differential is between "Cellophane" and parchment, particularly if a sheeting machine is used. Described how volume will be increased and suggested market tests.

c.) Still argues higher production cost and will not consider yet.

5. None.

2/21/41	P	Peter Busalacchi, Pres.
		Suggested tests to prove value of "Cellophane" on fillets. R) Still argues cost and will not test yet.
		M 5043

Close-up of a "Wonder Loaf" packed by Cudahy Bros. Co. in the "Pliofilm Mil-O-Seal" wrapper. More than 30 packing companies are using this packaging material for meat loaves.

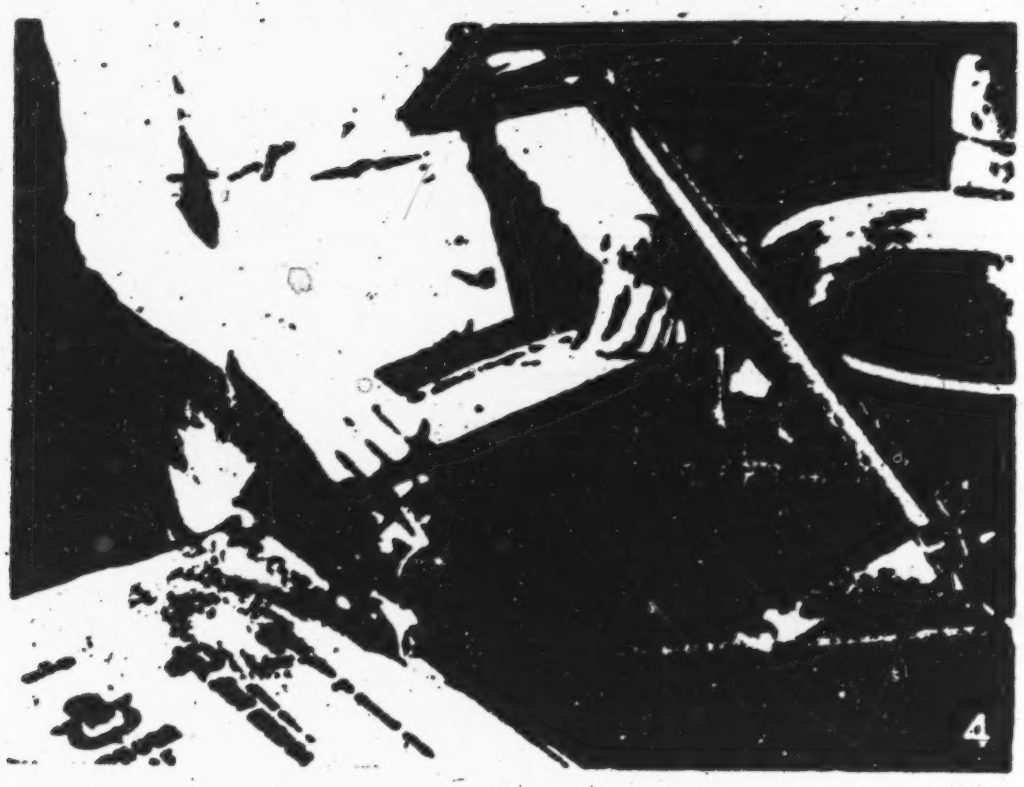
This article on

PACKAGING

Is of interest to

All Food Manufacturers

Because it reveals important results obtained with a new package for a food product. These results have a bearing on many food industry problems.—The Editors.



advantages

PROFITS evaporate, literally, in the meat packing business. Meat products lose moisture, and hence weight, between the plant and the consumer. And every ounce lost is an ounce the packer produced but did not sell.

Which explains why some 30 packing houses have adopted a new wrapper—rubber . hydrochloride—for meat loaf. A meat loaf which weighs 6 lb. at the plant often loses as much as 9 or 10 oz. by the time the butcher slices it for consumers. The average shrinkage is said to be from 8 to 10 per cent. Nearly all of this loss has been eliminated by the new wrapper, extensive tests have indicated.

Consider, for instance, tests conducted at the plant of Cudahy Bros. Co., Cudahy, Wis. Two freshly made loaves were used. One, weighing 5 lb. 8½ oz., was packed in the new wrapper. The other, weighing 5 lb. 9 oz., was inserted in another type of wrapper for meat loaf. These test loaves were then placed side by side in the cooler and in no way disturbed for seven days. At the end of this period, the older type wrapping was slimy, the loaf had turned a dark red in color, the package had lost its shape through contraction of the wrap, and the scales revealed that the meat had lost 9 oz.

The loaf wrapped in the new material was dry, it had the same color as a freshly packed loaf, it retained its original squareness in cross-section, and its weight loss was only ¼ oz. This test was conducted in a cooler where the temperature was held at 40 deg. F. during the experiment.

In a second test, two meat loaves were kept side by side for 90 hours in a room where the temperature was between 75 and 80 deg. The loaf wrapped in the new material lost ¼ oz., the other 8½ oz. Both loaves were then left undisturbed for seven more days. At the end of that time, the meat loaf in the old wrapper was spoiled and badly molded. The one in the new wrapper retained its fresh appearance and was subjected to a further test—sampling. Cudahy employees tasted the meat and found it "tasty, appetizing and in fresh condition."

OVER a period of several months extensive tests, of which the foregoing are examples, are reported to have revealed other advantages than saving in loss through shrinkage.

1—First step in the application of rubber hydrochloride wrap to meat loaf.

2—Second step. The wrapper is in place and second operator is dipping meat loaf into gelatine prior to placing it in wrapping machine. It is possible for one girl to do both operations.

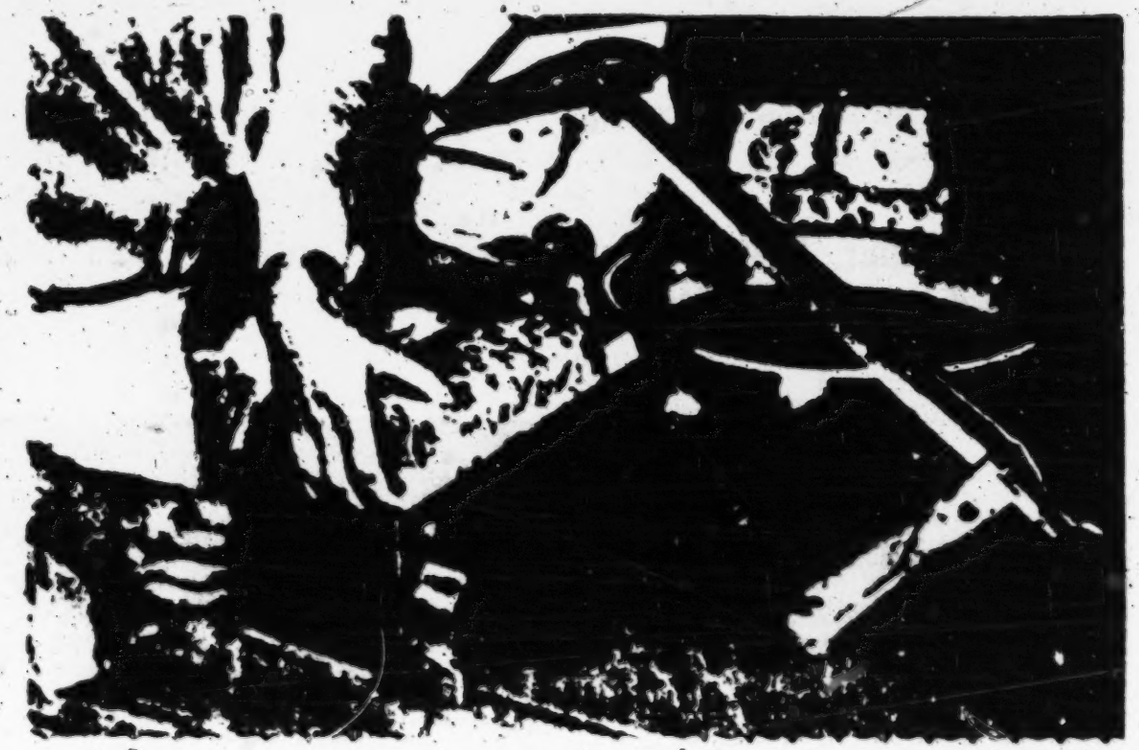
3 As one operator holds the sheet of wrapping material in place, the second operator places the gelatine-dipped loaf between the jaws of the packaging machine.

4—Operator laps the edges of the wrapper and squares up the package.

5 Sealing the wrapper with the electrically heated sealer bar.

6—Removing the loaf from the wrapping machine.

7—Completing the packaging operation by twisting the ends of the wrapper and tying it with cotton cord. After one end is tied, the second end may be twisted up easily to take up all slack, eliminating wrinkles and making a smooth package.



These advantages have been summarized as follows:

1. The new wrapper costs less than heavy-weight cellulose and compares favorably in cost with the new light-weight cases of this type. (The new wrap costs 30 to 40 per cent less than the heavy-weight cases.)

2. Indications are that the new wrapper will reduce labor cost through the ease with which it may be handled and applied.

3. Former troublesome breakage of containers in production is virtually eliminated, as only abnormal or deliberate mishandling will cause damage.

4. The new wrapping material increases keeping quality beyond the ability of all other materials tested. No mold or slime developed with meat loaves kept in the new wrapper eight weeks at 44 deg. or three weeks at 72 deg., indicating feasibility of the product's use in export shipping.

5. Cooked products do not darken and baked loaves do not bleach in the new wrapper, giving increased consumer appeal.

6. The package is attractive, as process color printing, including pastels and metallics, may be utilized to reproduce trademarks, company insignias, and so forth, on any part of the wrapper.

7. The rubber hydrochloride does not shrink, and as a result the meat loaves wrapped in it are not distorted from their original shape.

8. In shipping tests the new wrappings stood up better than other materials.

9. The rubber hydrochloride wrapper may be sliced easily by the butcher without dulling the knife. Or it may be opened at one end and slipped back for slicing and later retied for returning the product to the refrigerator. This eliminates dried, crusted ends.

10. Odd-shaped loaves or glazed or fruit-decorated hams can be packaged without additional effort.

The new wrapping material, called "Mil-O-Seal," is made from Goodyear Tire & Rubber Co.'s "Pliofilm," converted by Milprint, Inc., Milwaukee. Milprint developed a machine for applying it which is of simple construction. It consists essentially of a base, an adjustable plate, a heat-seal bar and a thermostat. All parts, except the thermostat and the handle for the heat-seal bar, are of stainless metal.

The base may be bolted to a work-table, or the machine may be used without permanent mounting. The vertical side, or jaw, of the machine nearest the operator acts as a guide for forming one side of the package. It is fixed, and its face is covered with a thin layer of rubber which serves to anchor the Pliofilm so that it will not slip when the wrap is being pulled up tightly around the meat loaf. The adjustable plate, farthest from the operator, slides along the base plate and is equipped with wing nuts for tightening.

In forming the package, the operator places the wrapper across the vertical guides, while a second operator immerses a loaf in gelatine. The loaf is then placed upon the wrapper and let down gently to the base plate, which forms the bottom of the package mold. The wrapper is then lapped on top of the loaf and sealed by depressing and rocking the heat-seal bar. The loaf is then lifted from the machine and placed on the table where the ends of the wrapper are twisted and tied with cotton cord. The various steps involved in forming the package are illustrated in the accompanying pictures.

While one operator may readily handle the entire cycle of packaging operations, two usually are used so that the one who does the gelatine dipping need not handle the finished package.

This method of packaging eliminates the stuffing operation; no soaking is required; the packaging may be done on a dry table, and the finished package is dry and clean. Then, the package is built around its contents so that it will conform to variations in shape and contour of the product.

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Wm. TEMPLE COMPANY	D. K. SHOOP	9-3-47

ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
1132 Seventh St.	1-2-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Oakland 7, Calif.	1-12	Foods Uncl.

L

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT ZPCO	5 M	Goodyear	Direct	R. Hydro	0			

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
Wm. Temple	Prop	X	M-S	

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Herring, Salmon	2 M	Goodyear	R	2 M
Cracklings, Jerky etc.	16 M	300 & 450 MST-52	R	16 M
TOTAL	18 M			18 M

R-12727 REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1. Cookies, repack, 450 MST-53 bags.
2. Are considering, but hesitate to because of odors from fish and cracklings which might taint cookies. May partition separate room for this operation.
3. Will use Goodyear film on herring and smoked salmon only during summer months, when it seems to keep fish better than cellophane.

M 5084

4509

359

Defendant's Exhibit No. 176

Defendant's Exhibit No. 177

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

Salesman D.E. Noel & W.J. Harte Date 3-22-33 No. 289

Firm A.J. Kasper & Co. Bus. Coffee Class 2-6

St. & No. 353 E. Illinois St. City Chicago State Ill.

Controlled by:

Final Decision by Roger Kasper Contacted on this call? yes

Buyer Contacted on this call?

Type of Call* — Productive X Service

Transparent Sheeting Used				Bo't From	Estimated Consumption Bs. This Quarter	Next Quarter
300 X	P.T.	Emb.	Inds.			
455	P.C.	Sheets	Misc.	Royal	500	500
600	M.T. X	Rolls		Us	250	250
H.W.	M.C.	Ists				

If using competitive material, state reasons why.

Items wrapped in Cellophane Dinner Hour Coffee in Triplex Bag. Queens Brand Coffee, hand wrapped, 3 Brand of tea, 12 sizes.

a. Sales tools used on this call:

Samples X Pack. Dev. , X Trav. Display

Photo Album Market Survey

Ad. Book X Post Campaign

b. Agreement account? no

c. Did you secure order? no If not, when? Ind.

d. Approx. date next call? sched.

e. If service call, state nature below:

Date of last Prod. Call	Rec'd at Branch Office	Date Typed	Copies for
2-21-33	3-27-33	3-28-33	

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. Creative suggestions to extend use of Cellophane made on this call.
7. What were the customer's reactions to your suggestions?
8. What is your plan for next call?
9. What assistance can organization give you?

1 - Roger Kasper, V.P.
2 - Coffee.
3-4-5 - None.

6 - Restated Triplex Bag on Queens Brand Coffee to use in Special promotion. Suggested 300 P.C. overwrap of glass coffee Jar, pointing out protection to label, cleanliness when received by housewife, added display.

7 - States they can not consider this. Are only selling very little of this brand of coffee, further states that they are planing to adopt a foil bag which is considerably less expensive than Cellophane. Mildly interested in the overwrapping of their glass jar and believe, although gave a negative impression during interview.

8 - Follow up closely on Bags. Also restate on overwrapping coffee jar.

9 - None.

M 5099

Defendant's Exhibit No. 178

DU PONT

FIRST CALL 6405 pkg 10

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

CUSTOMER	SALESMAN	DATE LAST REPORT
Colonial Coffee Co. Inc.	R.M.Henry-B.H.Heim	6/9/47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
538 W. Broadway	8/13/47	

CITY-ZONE-STATE	CLASS	INDUSTRY
New York 13, N. Y.	1-12	Coffee

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THRU	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	0						

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT VD	MAIL TO	M. L. CHGE.
K. Ganz	Pres.	X		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
TOTAL				

RETURN TO CELLOPHANE TRADE ANAL...

1. Performance of Riegle coated diaphane for packaging coffee on Transwraps.

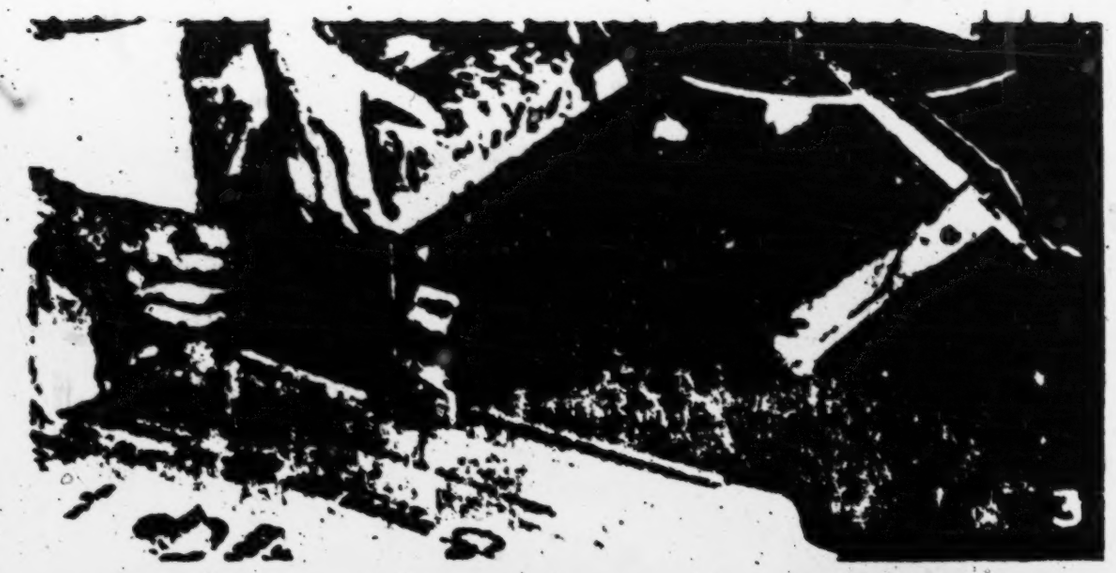
2. Mr. Ganz states he is very pleased with results and particularly with low cost.

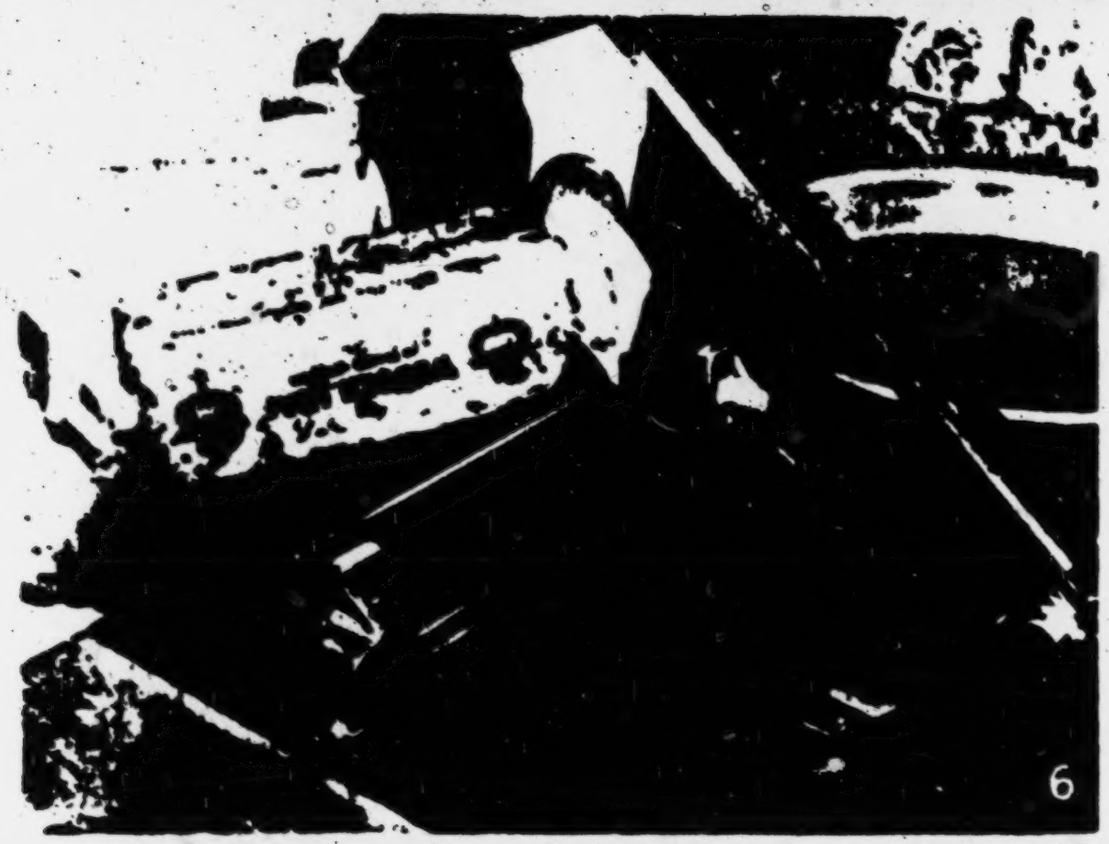
3. Advised efficiency on Transwrap nets about 10% lower than Cellophane. Appears that it was necessary for Riegle to put special coating on diaphane to raise efficiency to present point.

Mr. Ganz stated any time printed Cellophane meets, or approximates the low cost of printed diaphane he would adopt.

M 5095

H-12727—REV 2-47





M 5347

Meat loaf packaging line in the plant of Cudahy Bros. Co., Cudahy, Wis.

M 5347

4508

358

Defendant's Exhibit No. 179

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Colonial Coffee Co. Inc.	J. B. Phillips Jr.	5/20/48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
538 West B'way	8/5/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
New York 12, N. Y.	1-12	Coffee

W. Hart
Dieter

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	0						

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
K. Gans	Pres.	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	* R S C	ANNUAL POTENTIAL
TOTAL				

R-17737—REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

1.a Suggested refrigerated coffee unit,

b Discuss return to cellophane on regular coffee Transwrap unit.

2-a Not interested. Feel they are not large enough to warrant installation of refrigeration.

b Have made decision to continue using waxed diaphane (prtd).

3. By shifting from 40 lbs. to 30 lb. paper they can obtain prtd stock for 49¢/lb. Yield is approx. same as 450 MST. Riegel assured them they will get as much protection as with cellophane. Have completed shipping and handling tests -- no breakage.

Picked up unit and will try to arrange tests vs. Cellophane.

Discussed loss of visibility but they favor printing particularly since they distribute to restaurants only.

AUG 11 1948

M 5348

CELLOPHANE TRADE REPORT - EXTRA COPY

FIRST CALL ☐

CUSTOMER Horlick's
Horlick's Malted Milk Corp.

ST AND NO.
2109 Northwestern Ave.

CITY-ZONE-STATE
Racine, Wis.

DATE
8-11-48

CLASS
2-6

SALESMAN
J. Couturier

CONTROLLED BY

PURCHASING AUTHORITY

INDUSTRY
Foods

DATE LAST REPORT
7-12-48

C LB
Hartman

DU PONT CELLOPHANE		COMPETITIVE MATERIALS			1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.				
DU PONT	0	0			0	0	0	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE
Dr. F. L. Hartman	Dir.Res.	x		

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727 REV. 11-47 * R-ROLLS S-SHEETS C-CONVERTED

PRODUCTS AND CELLOPHANE WRAPPING

1. Follow up info for cocoa powder pkg. put up for Horlick's by Packaging Service Co. in Chicago

2. Hartman advised us that the tests are finished and data compiled. New package to be released in fall will be either d/w glassine or a laminated glassine.

Cellophane was only used because it was available. Hartman said it would not give desired protection over a long period and that, frankly, he thought cocoa held up better than he expected it would in cellophane.

We suggested they test Dob.'s Tritect for comparison against glassine. Hartman advised they have already explored its potentialities and still favor glassine. He indicated a Saran coated film might have possibilities in their operation.

5. a. CC L. K. Wilson

M 5039

Defendant's Exhibit No. 180

DUPONT

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Duncan Coffee Company, Inc.	W. G. Clark	12/20/48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1200 Carr Street	12/23/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Houston, Texas	1-12	Coffee

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT								

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
Paul Taft	[illegible]	X	M&S	

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. Cafe coffees

2. Claims have had lots of trouble with sticking of packages and breakage, plus coming apart at seal - poor seal. Pointed out that temperatures must be held down or packages will stick. Believe seals due to lack of proper temperature on sealing jaws.

Claims no temperatures have been over 120° but still getting sticking of packages. Admit nothing has been done to equipment. Pointed out this is contrary to all tests made by Chas. Shields here. No chance to do anything today, but will go into plant on next trip and spend some time on temperatures.

Has arranged to go to wax paper bags on Silex Coffee packages - Agreed to get Stokes-Smith repr. here to go over equipment before making change over.

Stressed with Taft unless they are willing to follow our our recommendation and cool coffee prior to packaging, he will have sticking.

No further commitments.

Defendant's Exhibit No. 181

4514

364

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for

Danish Dessert

a. Specify sales tools used—below:	d. Agreement account? no
b. Latest success story—below:	e. Did you secure order? no
c. Service and general remarks—below:	

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
8/16/39	9/21/39 DML	9/21/39	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1 & 2. None.

3. At time of last call Dr. Reinecke intimated new packaging question was under advisement for decision. Was non-committal upon contacting here today, both Dr. Reinecke and Mr. Monrad were out of town. Interviewed Mrs. Sharpe, P.A., two orders just mailed yesterday. Mrs. Sharpe said "I'm sorry but they are the last orders for "Cellophane", we have decided to use aluminum foil laminated to paper, have purchased stock of new wrappers, and new wrapping machines. This was the final recent decision of the executive board". She claimed further, their tests had proven foil gave better protection.

This, of course, I questioned, pointed to our laboratory tests on comparative protection of foil vs. "Cellophane" but there was little I could do to help the situation due to absence of Reinecke & Monrad.

E.A.WIGHTL Note. PHILA. HANDLING
What next move for us do you suggest?

OVER

M 5100

✓ Defendant's Exhibit No. 182

B-12913

DUPONT

Cellophane TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman J. L. CHAMBERLAIN Date 9/19/39 No. 47

Firm CHR. HANSEN'S LABORATORY INC. Bus. Foods Class 1-12

St. & No. City LittleFalls State N.Y.

Controlled by:

Final Decision by (Titles) K. J. Monrad, V.P. Contacted on this call? away

Buyer Mrs. F. Shapre, P.A. Contacted on this call? yes

Others Contacted this call (Titles) Dr. E. Reinecke - away

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
duPont	?	

Items wrapped in transparent sheeting: Junket Ice Cream Mix.

Other products on which Cellophane could be used: (Note new products in work) Junket Dessert - tablets - fudge

Danish Dessert

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Agreement account? no

e. Did you secure order? no

Defendant's Exhibit No. 183

EXPERIMENT #40-214

May 22, 1940

CC: ~~C. F. Brown~~ ~~O. P. Benz~~
~~C. M. Switzer~~ ~~T. L. Hines~~ ~~J. E. Hatt~~ ~~L. A. Yerkes~~
~~V. C. Clark~~ ~~J. E. Clark, Philadelphia~~
A. F. Wendler

GINGERBREAD MIX & DEVIL'S FOOD MIX IN "CELLOPHANE"

"CELLOPHANE" DIVISION,
E. I. DU PONT DE NEMOURS & CO., INC.,
Sales Service Section,
Wilmington, Delaware.

SUBJECT:

GINGERBREAD MIX & DEVIL'S FOOD MIX IN "CELLOPHANE"

OBJECT:

To compare the protection afforded Duff's Gingerbread Mix and Duff's Devil's Food Mix in the present package with that afforded these products by single and double-walled Transwrap units of MST "Cellophane".

SOURCE OF MATERIAL:

Six 14 ounce units of Gingerbread Mix and the same quantity of Devil's Food Mix were submitted by the P. Duff & Sons, Incorporated, 920 Duquesne Way, Pittsburgh, Pennsylvania. The six packages of each product were packaged in the following manner:

2 units with single-walled Transwrap packages of #300 Special MST placed in unprotected cardboard boxes.

3 units of double-walled Transwrap packages of #300 Special MST, similarly placed in cardboard boxes.

1 present package consisting of a printed foil wrap laminated on the outside of the cardboard box, the contents of the box being held in a greasene paper bag.

PROCEDURE:

Moisture analyses were made on one package of each type of Mix packaged in double-walled Transwrap units of MST "Cellophane" at the start of the test.

M 5327

The balance of the units were stored at 81% relative humidity, room temperature, for four weeks, with weighings made at weekly intervals. Examination for condition of the product and the moisture content of each product was made after two and four weeks in the "Cellophane" units and at the end of the test on the products in their present packages.

To determine the gain in weight by the unprotected cardboard boxes in those units containing Transwrap packages, two empty boxes were stored along with the test packages and weighed each week.

DETAILS OF RESULTS:

In Tables I and II attached are listed the gain in weight and moisture analyses figures obtained.

These figures indicate:

1. Double-walled Transwrap units of MST "Cellophane" were very effective in preventing gain in moisture of each product.
2. Double-walled units were far superior to single-walled units but were not quite as efficient as the present foil laminated package in their protective action.
3. While Gingerbread Mix contained more moisture originally than Devil's Food Mix, nevertheless both products appeared to be approximately equally susceptible to moisture absorption.

Examination for condition of the product showed no physical differences between these mixes packed in double-walled Transwrap units and those in the present package. Products in single MST "Cellophane" were somewhat damp and while still free-flowing, they were not as good as the material in the other two units.

CONCLUSIONS:

The results of this experiment indicate that double-walled Transwrap units of #300 MST "Cellophane" afforded very satisfactory protection to both Gingerbread Mix and Devil's Food Mix. The efficiency of the double-walled units was far superior to that of single-walled units, but did not quite equal that afforded by the present package.

By C. L. Blair
C. L. Blair, Manager,
SALES SERVICE LABORATORY.

APPROVED: A. F. Wendler
A. F. Wendler, Manager,
SALES SERVICE SECTION.

CLB:SS

M 5351

TABLE I

PERCENT GAIN IN WEIGHT OF DUFF GINGERBREAD MIX STORED AT 81% R.H.-R.T.

	1	2	3	4 Weeks
1. Single #300 Special MST	1.35%	2.61%	3.68%	4.35%
2. Double #300 Special MST	0.25%	0.45%	0.59%	0.68%
3. Present Package (Foil overwrap)	0.14%	0.27%	0.30%	0.43%

MOISTURE ANALYSES OF GINGERBREAD MIX

	Original	1	2	3	4 Weeks
1. Single #300 Special MST	3.68%	-	5.8%	-	8.34%
2. Double #300 Special MST	3.68%	-	3.89%	-	4.19%
3. Present Package	3.68%	-	-	-	4.23%

M 5351

TABLE II

PERCENT GAIN IN WEIGHT OF DUFF'S DEVIL'S FOOD MIX STORED AT 81% R.H.-R.T.

	1	2	3	4 Weeks
1. Single #300 Special MST	1.50%	2.05%	3.25%	3.70%
2. Double #300 Special MST	0.22%	0.44%	0.79%	0.85%
3. Present Package	0.09%	0.18%	0.22%	0.35%

MOISTURE ANALYSES OF DEVIL'S FOOD MIX

	Original	1	2	3	4 Weeks
1. Single #300 Special MST	2.30%	-	5.85%	-	7.00%
2. Double #300 Special MST	2.30%	-	3.07%	-	3.46%
3. Present Package	2.30%	-	-	-	3.19%

MI 5351

Defendant's Exhibit No. 186

APR 17 1950

DU PONT

12031
Pkg 4/2

Cellophane
TRADE MARK

TRADE REPORT
(Trade Analysis Copy)

SALES COR.	☐
PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☐
PLANNING	☐

mh

Salesman: F. W. Tranfield — Date: 9/21/42 — Type Call: P

Firm: Taylor Reed Corp. — Date last Call: 4/23/42 — Type Call: S — Date last Prod. Call: — Class: 2-6

St. & No.: Mamaroneck Avenue — Bus.: Food Products

City & State: Mamaroneck, N. Y. — Controlled by:

Final Decision by (Titles): M. P. Taylor, President — Contacted this call? yes

Buyer — Contacted this call?

Others Contacted this call (Titles): Chas. Reed, V.P.

RETURN TO CELLOPHANE TRADE ANALYSIS

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
None		[illegible]

Items in transp. sheeting: (specify which in competitive or converted film)

Other potential products:

Tumbo Chocolate pudding, cocoa marsh Milk Fortifier (Jar).

a. Sales aids used—specify below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Mailing list changes—below:

e. Agreement expires?

f. Did you secure order?

SEP 9 1942

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

✓ Defendant's Exhibit No. 187

SAC-1 REV. 10000 8-4-33

DUPONT CELLOPHANE

TRADE REPORT

(District Office File Copy)

452M 5132

Salesman D.E.Noel & C.B.Estabrook Date 8-25-33 No. 495

Firm Northwestern Yeast Co. Bus. Yeast Class 1-12

St. & No. 1750 N. Ashland Ave. City Chicago Ill.

Controlled by:

Final Decision by (Titles) Mr. Harr(No) Mr. Nelson Contacted on this call? Yes

Buyer Mr. Hodges Contacted on this call? N

Others Contacted this call (Titles)

Type of Call—Productive X Service

Sources of Supply	Est. Cons.-lbs. This Quarter	If using competitive material, state type and reasons

Items wrapped in Cellophane: Not using

Other products on which Cellophane could be used: (Note new products in work) Yeast Foam Tablets. Yeast Foam cakes.

a. Sales tools used on this call:

Samples X Trav. Disp. Photos Park. Dev.

Cons. Ads. Trade Ads. Mkt. Sur.

b. Agreement account? no

c. Did you secure order? no

d. Service, and general remarks—below

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
8-16-33	8-28-33	8-28-33	

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1. None.
2. Mr. Nelson states no decision on 5¢ packages as yet.

against the very low cost of wax wrappers seem to stand out in his mind.

4. Follow their results on Cellophane operating on their machine also presend P.D.D. package.

5. None.

M 5132

Defendant's Exhibit No. 188

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Capitol Sandwich Co.	F. N. Wylie	12/19/47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1461 Emerson St.	6/17/48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Denver, Colorado	3-4	Food

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	0	0	0	0	0	0		

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE
P. H. Thuneman	Owner	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

* R-ROLLS S-SHEETS C-CONVERTED

1. Sandwiches in cellophane vs. semi trans wax.

2. We used sample sheets of seconds and wrapped sandwiches along side of present wax (29 lb. semi trans. brown wax). Our efforts to no avail as Thuneman staunch believer in present package and too stubborn to change. Will not buy the visibility angle.

7-13-48
8-12-48
2-23-49-AC

M 5352

45

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.

2. Result of suggestions made on previous calls.

3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?

4. What is your plan for next call?

5. Action needed by: (a) District Office (b) Headquarters.

1. & 2. -- None.

3. Tumbo Chocolate pudding powder withdrawn from the market after breakage occurred, now under consideration for release in a new type of package that will give protection against sifting and will not "pinhole". Unit has to be made up on Transwrap equipment as no other filling or sealing device is available.

Taylor Reed wanted our recommendation as to a new package stating that they are now testing Milprint's treated laminated (no cellophane) paper.

We suggested that they talk to Catty in Norwalk regarding a laminated waxed paper and 450 MST cellophane, also to Shellmar and Dobeckmun on kraft paper and 45 lb. opaque, glassine and cellophane lamination. When they obtain sample rolls they should have Delboy of Trans Pac Services make up sample units and give them a vigorous handling test.

Reed stated they would investigate these converters and see what they can do. The cocoa situation being what it is and their Coco-Marsh business booming, they will perhaps only confine the Tumbo distribution locally if they get the right package.

4. Tumbo packaging.

5. None.

M 5059

Cons. Ads. Trade Ads. Mkt. Sur. | d. Service and general remarks—below

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
8-16-33	8-28-33	8-28-33	

CREATIVE WORK DONE

1. New items on market since last call—distribution, potential.
2. Result of suggestions made on last call.
3. Creative suggestions to extend use of Cellophane made on this call and customer's reactions?
4. What is your plan for next call?
5. What assistance can organization give you?

1. None.

2. Mr. Nelson states no decision on 5¢ packages as yet. there is a possibility of a new package for Yeast Foam tablets bottle unit - a decided increased interest in Yeast Foam Cake.

3. Suggested the possibility of dressing yeast foam tablet 50¢ unit in a new package applying Cellophane as a protection to carton. Pointed out that we felt they would get better counter display and this is necessary for increased sales also it would help tie in with their national advertising campaign offered services of Package Development Dept.

Interested gave us bottle of yeast foam tablets stating they would be interested in any suggestions we had to offer. Note am sending this in under separate cover.

Presented developed package of Yeast Foam cakes in M.S.T. Cellophane. Pointed out advantages of this package stressing on visibility of their label over present wrappers (note that product sold from racks in store) also stressed upon added protection of M.S.T. over their present wrapper.

They are very much interested and state they will consider. Mr. Hodge states the Shellmar Co. have called on them and are presenting a printed wrap which he is interested in. He felt however if they adopt Cellophane they will probably use unprinted stock first. However, intimated that they were interested in printed stock and considering it as a possibility. They are going to run a test to see if Cellophane will handle on their machines.

Mr. Hodge showed a cost conscious streak today that I thought I had fully broken down however, after pointing out that the cost per unit was only 1/10¢ per unit

Defendant's Exhibit No. 189

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE

EXECUTIVE OFFICES

May 6, 1932.

L.A.Y.

Mr. L. A. Yerkes, Pres.,
DuPont Cellophane Co.,
New York, N. Y.

Dear Len:

Very frequently when Cellophane reports come to the Executive Committee the question is raised whether Cellophane is doing everything which it can or should do in the interest of persuading the cigarette people to alter their package by the omission of one or two of the wrappers which they now use and which are more or less unnecessary when they use Cellophane. For instance, I presume that the tinfoil wrapper contributes nothing when Cellophane is used. The same may be true of one or two of the other wrappers.

The point is, that the expense of the Cellophane wrapper is undoubtedly an item to be considered and it is quite different if this expense is an additional dead weight load on the cigarette people or whether it is offset in part by the cheapening of their package otherwise. In other words, it involves the question of the soundness and security of Cellophane's position in this industry.

One of the committee members, I think Lammot, said he had heard of a new cigarette to be put out called the Paul Jones cigarette to be sold at 10¢ a package. He wondered if we had made any effort to design for them a Cellophane package which would contribute the advantages of Cellophane yet at the same time result in a very much cheaper package than that now used by other companies.

I told the committee that it was my understanding that this very subject was a live one with you all the time but that I would again write you about it. Maybe it might be well if you could address me a letter in this connection that I could send to the committee or still better, if you would address the committee direct.

Yours very truly,

W. S. Carpenter, Jr.

M 5353

WSC:W.

Defendant's Exhibit No. 190

Copy: Mr. J.E. Hatt
Mr. O.F. Beas

J.M.M.

May 8, 1939.

Hatt from Yerkes

Mr. W.S. Carpenter, Jr., Vice-President,
E.I. du Pont de Nemours & Company,
Wilmington, Del

Dear Walter:

Replying to your letter of the 6th, we have made I think very consistent efforts to interest the cigarette companies in an entirely different form of package which would reduce the expense of tinfoil or paper or some of the other ingredients, replacing them with Cellophane; so far, however, without success. The general attitude of all the cigarette companies is that the last thing in the world they want to contemplate is a change of any kind in their package.

Clarence Brown and I spoke to Mr. Williams of the Reynolds Tobacco Company about this only last week in Winston-Salem.

Naturally the idea is not a very original one and has occurred to the cigarette manufacturers as well as to ourselves, but we seem to be up against kind of a stone wall in getting any of them to consider seriously an actual change.

The same thing happens in the tobacco industry. We have worked out several very attractive packages as substitutes for the 10¢ smoking tobacco cans, but we meet the same resistance.

I will endeavor to get for you within the next few days a few samples of suggested packages which we have prepared and have submitted to the cigarette and tobacco companies.

I can assure you and the Committee that we are really alive to the situation but have not been able as yet to make any important headway. The tobacco companies as a group are very jealous of each other and very tight with their information and very loath to cooperate.

Yours very truly,

L A. Yerkes

LAY_ML

Defendant's Exhibit No. 191

DU PONT CELLOPHANE COMPANY, INC.

NEW YORK, N.Y.

May 19, 1932.

TO: MR. L. A. YERKES, PRESIDENT.

FROM: MR. O. F. RANZ, DIRECTOR OF SALES.

Subject: CIGARETTE PACKAGES.

I am delivering to you herewith an exhibit illustrating changes in packaging which we have submitted to the cigarette companies during the past two years - either for the purpose of reducing the cost of their present package to help offset the added cost of Cellophane or to increase the value of Cellophane to the customer. The attached list identifies and describes each.

These samples represent merely the mechanical features of the suggested packages without regard to brand. These ideas, in one form or another, have been suggested to each of the "big four" cigarette companies.

In no single case did we get any encouragement - the reaction being uniformly the same, i.e. that they were not interested in making any change in the type of package that they had established as standard over a period of years.

A factor to bear in mind in this connection is that present machine equipment is designed for the present type of package and represents a very large investment and the expense of machine changes or new equipment needed to effect the package changes we suggested, might very well offset the added cost of Cellophane as now used.

Then again, the adoption of Cellophane as an overwrap called for no additional machine investment except the relatively small expense of conversion to handle Cellophane - this because glassine was previously used in the same manner on these same machines. This statement does not apply to the R. J. Reynolds Company who was the only one not previously using glassine. It is true that the other three companies have purchased a certain number of new wrapping machines, not because this was made necessary by Cellophane but principally due to natural obsolescence or desire for more effective operation.

M 5355

DU PONT CELLOPHANE

DU PONT CELLOPHANE COMPANY, INC.

NEW YORK, N. Y.

May 19, 1932.

Mr. L. A. Yerkes, President.

Reynolds, American, Liggett & Myers and Lorrillard all manufacture smoking tobacco. Here, too we have made numerous suggestions over a period of time involving the reduction of present packaging materials to offset as far as possible the added cost of Cellophane.

It is significant to note that on the brands of smoking tobacco now utilizing Cellophane, our material has merely been added to the previous package in one way or another. In no instance, in spite of numerous presentations made by us, has the manufacturer been willing to change or cheapen his present package.

A few samples illustrating our suggestions along this line are included.

OFB DB

M 53555

Defendant's Exhibit No. 192

5/19/32

PACKAGE CHANGES

SUBMITTED TO CIGARETTE

COMPANIES

CIGARETTES.

1. Complete wrap in heavy printed paper in place of present cup of light printed paper, foil and inner paper liner. Over-wrap of 300 M.T. Cellophane.

2. Direct wrap of cigarettes in 300 M.T. Cellophane, inserted in printed cup of paper overwrapped in 300 M.T. Cellophane gives double protection, eliminates foil and inner paper liner.

3. Direct wrap of laminated foil and 300 M.T. Cellophane, inserted in printed paper cup. Outside glassine wrap and inner paper liner eliminated.

4. Die cut package - overwrapped in 300 M.T. Cellophane, no other change but window.

5. Overwrap of present package in 300 M.T. Amber Cellophane. To give individuality to package.

6. Direct wrap of printed 300 M.T. Cellophane, all other materials eliminated.

7. Original, new type of package. Reverse corrugated slide unit, overwrapped in 300 M.T. Cellophane and placed in gold paper outer wrap.

8. Direct wrap of silver paper instead of foil, eliminating inner paper liner, inserted in present cup, overwrap of 300 M.T. Cellophane.

9. 50¢ pack gift unit for women - refill units for cigarette vanity case directly wrapped in 300 M.T. Cellophane (printed). All other materials eliminated.

#10. Laminated M.T. Cellophane and foil (to be printed). Eliminates printed cup and inner paper liner.

(No sample) Use of cardboard instead of tin box for 50's.

M 5356

PACKAGE CHANGES

SUBMITTED TO CIGARETTE

COMPANIES.

SMOKING TOBACCO.

A. Cellophane container (300 M.T.) inside of cup type unit.

B. Cellophane container (300 M.T.) inside of tuck-end carton.

C. Laminated M.T. Cellophane and paper container.

D. Combination unit - container of printed heavy paper with pouch of laminated cloth and 300 M.T. Cellophane, combination unit overwrapped in 300 M.T. Cellophane.

E. Band wrap of Cellophane over cardboard box to replace tin box.

DB
m

Defendant's Exhibit No. 193

C O N F I D E N T I A L

EXPERIMENT X-282-A

CC: 1. [illegible]
2. [illegible]
3. PATENT FILE

JULY 18, 1934

SUBJECT: CIGARETTES

A COMPARISON OF VARIOUS WRAPPING MATERIALS

Du Pont Cellophane Co., Inc.
Technical Service Laboratory

M 52-41

SUBJECT: CIGARETTES

A COMPARISON OF VARIOUS WRAPPING MATERIALS

OBJECTIVE

To determine the protection afforded by various wrapping materials to Lucky Strike and Chesterfield cigarettes.

Materials Used

Ten cartons of Lucky Strike cigarettes-secured direct from the Richmond plant of the American Tobacco Company.

Each carton of cigarettes was overwrapped in a heavy waxed paper for added protection in case of prolonged storage.

The individual packages of cigarettes were ideally wrapped - there being no poorly sealed packages found in the entire lot. The American Tobacco Company takes considerable pains in producing as tightly sealed a package as possible.

Ten cartons of Chesterfield cigarettes were secured from the warehouse of the United Cigar Stores, Inc.

These cartons did not have any overwrap as added protection against moisture loss.

The individual packages of Chesterfield cigarettes were loosely packed in comparison to the Lucky Strike and were not as well sealed. This not only applied to the top but also the bottom of the two stacks.

The following wrapping materials were employed on the individual cigarette packages:-

Plain Regalite

Moistureproof Regelite

Waxed glassine

Aqualene

Flexo-Aqualene

Diaphane

M.B.T. "Cellophane"

Standard M.T. "Cellophane"

380-B - M.T. "Cellophane"

PROCEDURE

Moisture analyses were run on both brands of cigarettes immediately upon receipt in the laboratory - the xylene distillation method being employed. Distillation was for a period of thirty minutes.

Permeabilities were run on the various unused wrappers, as well as on the original wraps from both brands of cigarettes.

Extreme care was taken in applying and sealing the various wrappers, listed above, on the cigarette packages. A straight heat seal was employed on:

M 524

Moistureproof Regalite

Waxed glassine

Aqualene

Diaphane

M.S.T. "Cellophane"

A mixture of 70% methyl cellosolve and 30% 9758 adhesive was employed in sealing standard M.T. "Cellophane" and 300-B - M.T. "Cellophane".

A latex adhesive was used for sealing the plain Regalite.

Packages of both brands with the original wrappers of M.T. "Cellophane" were also included.

After weighing the packages were exposed to 17% R.H. at room temperature (variations from 68 to 97° F.). Successive weighings were made at the end of 7, 14, 21, 28 days.

Final moisture analyses were run on the cigarettes protected by the various wrappers.

Permeabilities were run on the various wrappers employed at the end of the test.

M 5241

RESULTS

TABLE I

Average Percent Loss in Weight of Lucky Strike Cigarettes

Type of Wrapper	Percent loss in weight			
	Time in Days			
	7	14	21	28
Plain Regalite	1.48	2.48	3.40	4.18
Moistureproof Regalite	.49	.94	1.41	1.89
Unwrapped	2.96	4.68	5.67	6.22
Waxed glassine	.15	.24	.36	.50
Aqualene	.39	.74	1.11	1.57
Flexo-Aqualene	.26	.48	.73	1.04
Diaphane	.65	1.32	2.05	2.71
M.S.T. "Cellophane"	.20	.39	.61	.83
Standard M.T. "Cellophane"	.28	.54	.86	1.17
380-B - M.T. "Cellophane"	.18	.35	.53	.73
M.T. "Cellophane"-as received	.65	1.16	1.72	2.22

TABLE II

Average Percent Loss in Weight of Chesterfield Cigarettes

Type of Wrapper	Percent loss in weight			
	Time in Days			
	7	14	21	28
Plain Regalite	1.90	2.88	3.84	4.47
Moistureproof Regalite	.29	.52	.80	1.11
Unwrapped	4.14	5.13	5.46	5.56
Waxed glassine	.16	.28	.42	.86
Aqualene	.34	.59	.89	1.47
Flexo-Aqualene	.27	.40	.60	.83
Diaphane	.84	1.48	2.12	2.91
M.S.T. "Cellophane"	.39	.71	1.13	1.65
Standard M.T. "Cellophane"	.43	.79	1.21	1.77
380-B - M.T. "Cellophane"	.38	.70	1.07	1.57
M.T. "Cellophane"-as received	1.08	1.79	2.52	3.28

M 5241

RESULTS - Continued

TABLE III

Moisture Analyses

	Lucky Strike	Chesterfield
Percent Original Moisture	13.0	13.3

Percent Final Moisture

Wrapper	Lucky Strike	Chesterfield
Plain Regalite	8.7	8.8
Moistureproof Regalite	11.0	12.2
Unwrapped	8.7	8.7
Waxed glassine	12.1	12.5
Aqualene	11.8	12.0
Flexo-Aqualene	12.2	12.8
Diaphane	10.6	10.5
M.S.T. "Cellophane"	12.0	11.9
Standard M.T. "Cellophane"	11.8	11.7
980-B - M.T. "Cellophane"	12.5	11.9
M.T. "Cellophane"-as received	11.0	10.2

TABLE IV

Average Permeabilities

Wrapper	Start of Test	End of Test
Plain Regalite	6,700	----
Moistureproof Regalite	81	35.5
Waxed glassine	14	19
Aqualene	23	31
Flexo-Aqualene	27	35
Diaphane	521	307

	Chesterfield	Lucky Strike
M.S.T. "Cellophane"	161	48
Standard M.T. "Cellophane"	246	124
980-B - M.T. "Cellophane"	110	67
M.T. "Cellophane" (as received) - Lucky Strike	288	
M.T. "Cellophane" (as received) - Chesterfield	418	

M 5241

DISCUSSION

In Table IV are given the average permeabilities of the respective wrappers employed in this test. With the exception of plain Regalite and Diaphane the P.V.s of all wrappers at the beginning of the test were quite low - all being AA or AAA grade stock. The P.V.s for the M.T. "Cellophane" wrappers as received on both brands of cigarettes were comparatively high.

At the end of the test we find very little change in the original permeabilities for M.T. Regalite, waxed glassine, Aqualene, Flexo-Aqualene and Diaphane. For the wrappers of Cellophane the results varied according to the brand - the permeability for the wrappers on the Chesterfield cigarettes showing a relatively high breakdown in original moistureproofness whereas those on the Lucky Strike cigarettes showed comparatively little breakdown, particularly the M.S.T. and 980-B M.T. "Cellophane". Why a variation of this sort should be so pronounced with respect to brand of cigarette is puzzling to say the least. All wrappers of Cellophane were taken from the same eight or ten large sized sheets in the laboratory and the original permeabilities did not show any such variation as this. Possibly the fact that the Lucky Strike cigarette package is hard, compact and considerably easier to wrap and seal as compared to the Chesterfield package may account for some of this variation.

M 5241

DISCUSSION - Continued

The average losses in weight of the cigarette packages (see Tables I and II) check quite closely with the relative variations in permeability as listed in Table IV. Except for moistureproof Regalite and all packages wrapped in Cellophane, the loss in weight for both brands is quite similar. Lucky Strikes wrapped in M.S.T., standard M.T. and 980-B - M.T. "Cellophane" lost considerably less than Chesterfields protected with the same wrappers. This again coincides with the results obtained in the permeability test.

In Table III the final moisture contents are quite interesting. There was a definite dryness in the feel of the cigarettes having a moisture content below 11%. This means the only ones we would consider in an unsmokable condition were those overwrapped in:-

Plain Regalite
Diaphane - unwrapped
M.T. "Cellophane" (as received on Chesterfield packages)

In other words, actually only two moistureproof wrappers showed themselves to be unsuitable for protecting cigarettes (according to this test), those being Diaphane and the moistureproof Cellophane (original wrap) on Chesterfield cigarettes. With respect to the latter we are positive that a good portion of the loss in moisture was due entirely to lack of tight sealing employed on all Chesterfield packages.

M 52411

CONCLUSIONS - Continued

While results in general may show waxed glassine and Flexo-Aqualene to be slightly better than M.S.T. and 360-B M.T. "Cellophane" the slight differences in permeabilities, percent loss in weight or final moisture content are such as to have these five materials included in one group.

SUMMARY

1. Original permeabilities of all unused moisture-proof wrappers except Diaphane - quite uniformly low.

2. Permeabilities of M.T. "Cellophane" wrappers on receipt of cigarettes were rather high.

3. Permeabilities of various wrappers at the end of the test showed no breakdown for M.T. Regalite, waxed glassine, Aqualene, Flexo-Aqualene or Diaphane.

4. Permeabilities of all "Cellophane" wrappers on Chesterfield cigarette packages showed decided breakdown. This was not true of the wrappers of Cellophane on Lucky Strike cigarette packages.

5. Generally speaking, all Chesterfield cigarette packages showed a higher percent loss in moisture than the Lucky Strike units.

6. All packages wrapped in plain Regalite and Diaphane were considered unsmokable.

7. Waxed glassine and Flexo-Aqualene are equally as good as M.S.T. "Cellophane" and 360-B - M.T. "Cellophane" in preventing cigarettes from drying out when exposed to adverse conditions.

M 3241

CONCLUSIONS

As a result of this test we find that M.T. Pergamito, waxed glassine, Aqualene, Flexo-Aqualene, M.S.T. "Cellophane", standard M.T. "Cellophane" and 380-B - M.T. "Cellophane" when properly sealed keep cigarettes in a satisfactory smokable condition over a twenty-eight day exposure to 17% R.H.

PREPARED BY _____
E. C. Schilly
Technical Service Section

APPROVED BY _____
W. A. Boh, Manager
Technical Service Section

MS.

Defendant's Exhibit No. 194

BULLETIN

INFORMATION BULLETIN NO. 67-MM

JULY 16, 1937

FOIL ON CIGARS

DURING RECENT MONTHS THERE HAVE BEEN BURSTS OF RENEWED ACTIVITY ON THE PART OF FOIL MANUFACTURERS IN THE CIGAR INDUSTRY. REACTIONS TO THIS ACTIVITY, AS RELAYED ON TO US BY CERTAIN CIGAR ACCOUNTS, MIGHT ON THE SURFACE APPEAR SLIGHTLY DISTURBING. TO KEEP PROPERLY ORIENTED ON THIS SUBJECT, IT THEREFORE SEEMS DESIRABLE TO REVIEW, FOR THE BENEFIT OF THE NEWER MEMBERS OF THE ORGANIZATION PARTICULARLY, THE ENTIRE HISTORY OF FOIL IN THE CIGAR INDUSTRY. HERE ARE THE HIGH SPOTS:

1. PRIOR TO THE ADVENT OF MOISTUREPROOF "CELLOPHANE", FOIL WAS COMING INTO LIMITED USAGE ON CIGARS, AIDED, OF COURSE, BY THE DEVELOPMENT OF MACHINES TO DO THE WRAPPING JOB AUTOMATICALLY.

2. FOIL PROVIDED TO SOME DEGREE MOISTURE PROTECTION, AND MORE PARTICULARLY HANDLING PROTECTION IN THE SMOKER'S POCKET. IT HAD THE VERY DEFINITE NEGATIVE OF HIDING THE CIGAR, THUS DEFEATING TO A CERTAIN EXTENT, THE OBJECT OF THE PURCHASE OF HIGHER PRICED LIGHT SHADES OF LEAF TOBACCO.

3. EVEN BEFORE THE ACTUAL INTRODUCTION OF MOISTUREPROOF "CELLOPHANE", CERTAIN OF THE MORE PROGRESSIVE MANUFACTURERS SENSED THE POSSIBILITY OF A VISIBLE PROTECTIVE WRAP AND WERE TRYING OUT THE NON-MOISTUREPROOF P.T. FILM. WHEN MOISTUREPROOF "CELLOPHANE" WAS FIRST PLACED ON THE MARKET, CIGAR MANUFACTURERS SHOWED THE KEENEST INTEREST AND SOON SEVERAL OF THE SMALLER MANUFACTURERS PLACED BRANDS ON THE MARKET IN THIS NEW WRAP.

4. CIGARS IN "CELLOPHANE" WERE INSTANTANEOUS SUCCESSES IN EVERY CASE. THE DEALER REACTION WAS TREMENDOUSLY ENTHUSIASTIC. SMOKERS THROUGHOUT THE COUNTRY TRIED CIGARS IN THE NEW WRAPS, NOTED THE IMPROVEMENT AND

TOLD THEIR FRIENDS ABOUT THEM IN NO UNCERTAIN TERMS.

5. IN JUST A FEW BRIEF WEEKS THE MOVEMENT SPREAD TO THE ENTIRE INDUSTRY. LITERALLY, WE COULD NOT MAKE "CELLOPHANE" FAST ENOUGH TO TAKE CARE OF THE ORDERS. PURCHASING AGENTS WERE EVEN CALLING ON US TO GET PREFERRED SHIPMENTS. THE AMERICAN CIGAR SMOKING PUBLIC HAD SHOWN WITH A DEFINITE VOTE THEY APPRECIATED THIS NEW IMPROVEMENT IN CIGAR PACKAGING -- VISIBLE PROTECTION.

6. FOIL WRAPPED CIGARS BECAME A DRUG ON THE MARKET. CERTAIN MANUFACTURERS EVEN WENT SO FAR AS TO TAKE BACK FOIL-WRAPPED UNSOLD STOCK AND REPLACE IT WITH "CELLOPHANE" WRAPPINGS. OTHERS FURNISHED TUBES OF "CELLOPHANE" FOR REWRAPPING IN THE FIELD. SOME DEALERS, UNABLE TO OBTAIN THE MANUFACTURERS' COOPERATION, BOUGHT THEIR OWN TUBES, THREW OUT THE FOIL AND REWRAPPED THEMSELVES. NOTHING OF SUCH A REVOLUTIONARY CHARACTER EVER HAPPENED BEFORE IN THE CIGAR INDUSTRY!

7. IN SUCCEEDING YEARS, PRACTICALLY THE ENTIRE CIGAR OUTPUT HAS BEEN PACKAGED IN MOISTUREPROOF TRANSPARENT WRAPS. IT HAS PROVIDED A MUCH HIGHER DEGREE OF PROTECTION THAN BEFORE POSSIBLE, AND AT THE SAME TIME HAS PROVIDED THE VISIBILITY THAT CIGAR SMOKERS WANT IN CHOOSING THE CIGARS THEY BUY.

8. FROM TIME TO TIME DURING THIS PERIOD, FOIL COMPANIES HAVE MADE EFFORTS TO IMPROVE THEIR PRODUCT IN AN ATTEMPT TO GAIN RE-ENTREE IN THE CIGAR FIELD, WHICH IS ONLY NATURAL. THEY HAVE INTERESTED VARIOUS CIGAR MANUFACTURERS TO THE POINT OF TAKING ACTION, AND FROM TIME TO TIME WE HAVE SEEN INTRODUCTION OF FOIL WRAPPED CIGARS SUCH AS "BERING", "SAN FELICE" AND OTHERS. INITIAL REPORTS HAVE GIVEN AN INDICATION OF CERTAIN SALES SUCCESSES FOLLOWING THESE INTRODUCTIONS, BUT CAREFUL SURVEYS IN RETAIL STORES HAVE INDICATED IN PRACTICALLY EVERY INSTANCE THIS SUCCESS HAS BEEN DUE

TO RATHER EXTENSIVE NEWSPAPER ADVERTISING, WITH CONSEQUENT SPECIAL DISPLAY ON THE DEALER'S PART; AND THE NEWNESS OF THE WRAP. WHEN THE NEWSPAPER ADVERTISING HAS BEEN WITHDRAWN AND CURIOSITY SATISFIED, SALES HAVE SLUMPED.

9. OF MORE RECENT DATE, THE FOIL MANUFACTURERS HAVE INTRODUCED A NEW HEAT-SEALING TYPE OF PAPER-LINED FOIL WHICH CAN BE USED ONLY ON A SPECIAL TYPE OF WRAPPING MACHINE. ACCOMPANYING PROPAGANDA INDICATES THIS IS CONSIDERABLY SUPERIOR IN MOISTURE PROTECTION TO PREVIOUS FOIL WRAPS AND TO "CELLOPHANE" DUE LARGELY TO A STRONG, COMPLETE SEAL. AS IN PREVIOUS CASES, THESE CIGARS ARE BEING INTRODUCED TO THE PUBLIC ACCOMPANIED BY THE USUAL ADVERTISING SPLURGE. WHETHER SALES WILL HOLD UP WITHOUT BENEFIT OF ADVERTISING SUPPORT CAN ONLY BE DETERMINED IN THE FUTURE. THE FACT REMAINS THIS FOIL WRAP IS APPROXIMATELY THREE TIMES AS EXPENSIVE AS "CELLOPHANE" AND, WITH PRESENT NARROW PROFIT MARGINS, PRESENTS A VERY DEFINITE COST PROBLEM TO THE CIGAR MANUFACTURER. IT STILL HAS THE INHERENT WEAKNESS OF COMPLETE LACK OF VISIBILITY, AND ALSO THE COMPLETE TIGHT SEAL WILL PROBABLY PROVE A DRAWBACK FROM A CONVENIENCE ANGLE. ITS USE MAY ENCOURAGE, AS IN THE PAST, A RELAXING OF QUALITY AND INSPECTION STANDARDS HARDLY BENEFICIAL TO THE INDUSTRY AS A WHOLE.

SUMMARY

IN YOUR CURRENT DISCUSSIONS WITH CIGAR MANUFACTURERS, IT IS THEREFORE QUITE DESIRABLE TO HAVE THEM REVIEW THIS LATEST FOIL PROPAGANDA IN THE LIGHT OF PAST HISTORY. ALL THE FACTS INDICATE THE AVERAGE CIGAR SMOKER HAS A VERY DEFINITE DESIRE - AND RIGHT - TO SEE THE CIGAR HE BUYS. UNDER NORMAL TURNOVER CONDITIONS, THERE IS NO REASON TO BELIEVE THE PROTECTION GIVEN BY "CELLOPHANE" IS NOT ENTIRELY ADEQUATE, AND THERE IS NO PROOF THAT FOIL OFFERS ANY REAL SALES ADVANTAGE.

C. F. BROWN,
G. A. D. S.

CJS

E. I. DU PONT DE NEMOURS & COMPANY
, INCORPORATED
"CELLOPHANE" DIVISION

M 5118

Defendant's Exhibit No. 195

EXPERIMENT NO. 37-98

August 2, 1937

CC: C.F.Brown-O.F.Benz
T.L.Hines-J.F.Hatt-L.A.Yerkes
A.F.Wendler

SALES DIVISION
NEW YORK OFFICE

HEAT-SEALING FOIL VS. M.T. "CELLOPHANE"

AS A CIGAR WRAP

E. I. du Pont de Nemours and Company
"Cellophane" Division
Sales Service Section
New York, N. Y.

SUBJECT

Heat-Sealing Foil vs. M.T. "Cellophane"
As A Cigar Wrap

OBJECT

To compare the protection afforded cigars by wraps of heat-sealing foil vs. M.T. "Cellophane".

SOURCE OF MATERIALS

One box of 50 foil wrapped "Natural Bloom" cigars from Natural Bloom Cigars, Inc., Passaic, New Jersey, obtained by R. C. Russell.

One box of 50 "Natural Bloom" cigars wrapped in M.T. "Cellophane" obtained from the same company by N. G. Hunter.

The foil wrap has a waxed glassine liner laminated with adhesive to the foil. The seal is effected by approximately a 1/4" heat seal of inside layer to inside layer. This is then folded tightly against the cigar. End folds are good and remain in place although not "tacked down".

PROCEDURE

Moisture analyses were made on cigars in both wraps originally and at the end of the test.

Two units of 17 cigars each, in a single row in half-size boxes were prepared for both types of wrapped cigars and one of unwrapped cigars was included.

All units were stored at 17% relative humidity at room temperature for ten weeks. Weighings were made at weekly intervals. Net weights were obtained originally at the end of the first week, and at the end of the test.

DETAILS OF RESULTS

In Table I attached, results of moisture analyses are listed. These figures indicate:

1. Cigars in foil lost approximately 1.5% moisture during the time they left the factory and the time the test was started, and
2. With a foil wrap less moisture is lost from the cigars than occurs with a wrap of M.T. "Cellophane".

In Table II loss in weight figures of the units stored at 17% relative humidity are recorded and in Table III these loss in weight figures are used to calculate the per cent moisture in the cigars at various intervals throughout the test.

Unfortunately, the cigars in foil were lower in original moisture content than those in Cellophane. This was due to their age. In order to make direct comparisons, the per cent loss in weight was calculated on the assumption that the foil wrapped cigars contained the same original percentage moisture as the Cellophane wrapped ones.

These figures are shown in the attached chart and indicate:

1. Heat-sealing foil keeps cigars in smokable condition for four and three-quarter weeks.
2. M.T. "Cellophane" affords adequate protection for two and one-half weeks.
3. An unwrapped cigar becomes unsmokable after three and one-half days.

M 5243

The severity of this test was so great that cigars whether wrapped or unwrapped will have the same residual moisture content after three months exposure. Therefore, it is apropos to point out that this test is not comparable with field conditions, but rather only indicative of the efficiency of the type of wrapper.

P.V.U.'s of the wraps as received are shown in Table IV. The exceptionally good permeability of the foil undoubtedly accounts for the excellent protection it affords cigars.

CONCLUSIONS

Results of this test indicate that heat-sealing foil affords better protection to cigars than does a wrap of M.T. "Cellophane". This superior protection is undoubtedly due to the very good permeability of the foil wrap and also to a very efficient seal.

C. L. Blair,
Sales Service Section.

APPROVED _____
A. F. Wendler, Manager,
Sales Service Section.

md

TABLE I

MOISTURE ANALYSES OF CIGARS BY DISTILLATION

	AS RECEIVED	AFTER 10 WEEKS
In M.T. "Cellophane"	16.10%	7.14%
In Foil	14.51%	10.12%

TABLE II

LOSS IN WEIGHT IN GRAMS OF UNITS STORED AT 17% R. H.

	M.T. "Cellophane"			Foil			Unwrapped
	A	B	Avg.	C	D	Avg	E
After 1 wk.	2.3	2.3	2.3	0.5	0.5	0.5	8.0
2 "	3.1	3.2	3.15	0.7	0.6	0.65	7.4
3 "	5.4	5.3	5.35	1.3	1.4	1.35	7.8
4 "	6.2	6.5	6.35	1.6	1.9	1.75	7.7
5 "	7.9	8.0	7.95	2.8	3.0	2.90	8.4
6 "	8.2	8.7	8.45	3.2	3.2	3.20	8.6
7 "	8.7	9.0	8.85	3.6	3.7	3.65	8.7
8 "	9.3	9.5	9.4	4.2	4.2	4.20	8.8
10 "	10.6	10.4	10.5	5.6	5.4	5.50	9.6
Wgt. of Cigars	103	101.7		105.7	104.5		93.4

M 524

TABLE III

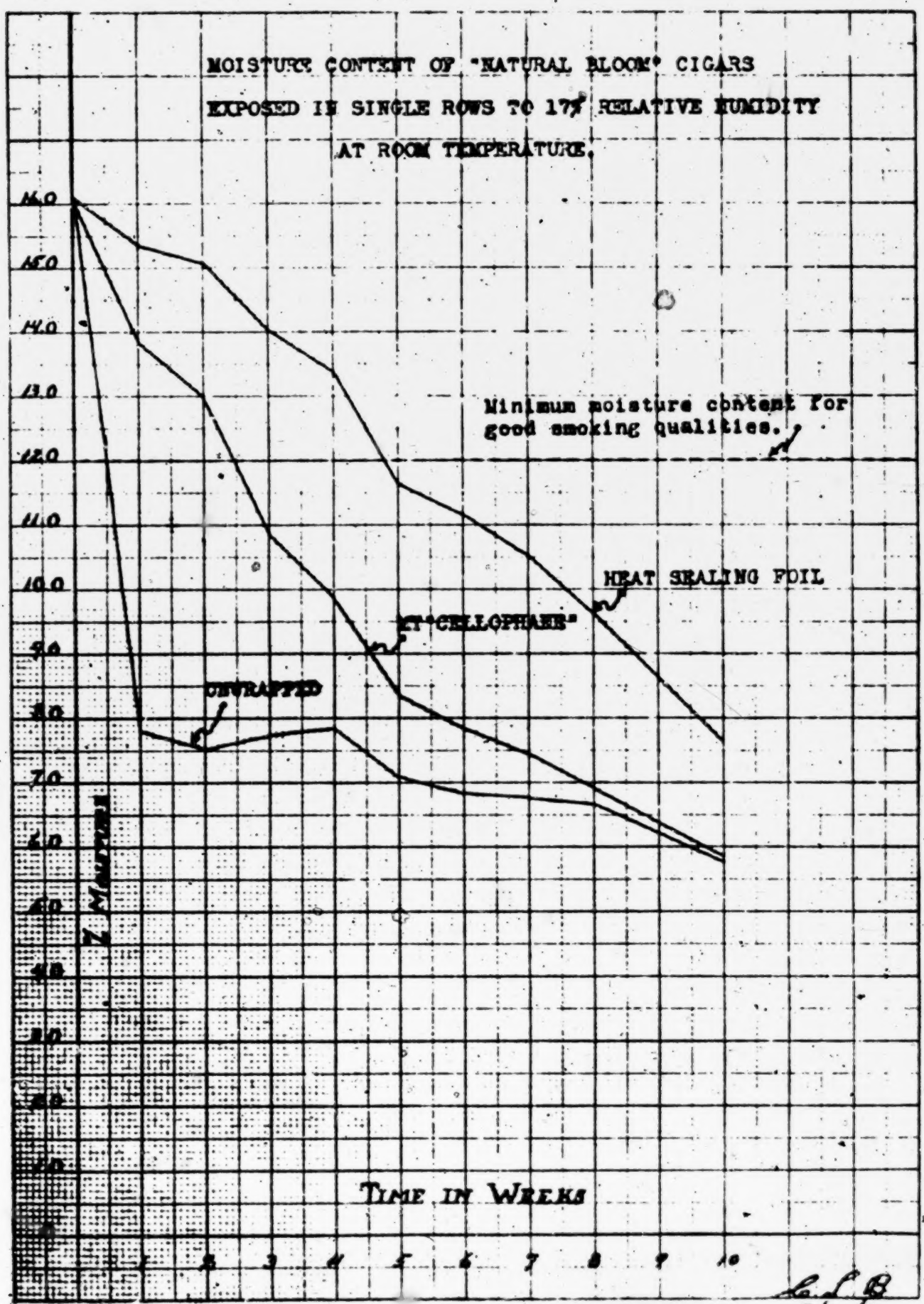
CALCULATED LOSS IN MOISTURE FROM WEIGHT LOSSES

	M. T. "Cellophane"	Foil	Corrected Foil	Unwrapped
Original	16.10%	14.51%	16.10%	16.10%
After 1 week	13.86	14.03	15.33	7.80
" 2 "	13.03	13.89	15.10	7.54
" 3 "	10.88	13.23	14.04	7.75
" 4 "	9.90	12.84	13.42	7.85
" 5 "	8.54	11.75	11.65	7.10
" 6 "	7.85	11.46	11.18	6.88
" 7 "	7.46	11.04	10.52	6.78
" 8 "	6.92	10.52	9.67	6.68
" 10 "	5.87%	9.30	7.69	5.80

TABLE IV

P.V.U.'s OF WRAPS FROM CIGARS

M.T. "Cellophane"	81
Foil	12


MOISTURE CONTENT OF "NATURAL BLOOM" CIGARS
EXPOSED IN SINGLE ROWS TO 17% RELATIVE HUMIDITY
AT ROOM TEMPERATURE.
Minimum moisture content for good smoking qualities.
HEAT SEALING FOIL
"CELLOPHANE"
UNWRAPPED
% MOISTURE
TIME IN WEEKS
1 2 3 4 5 6 7 8 9 10
7/20/37
M 5263

Defendant's Exhibit No. 196

BULLETIN

C. F. BROWN

INFORMATION BULLETIN NO. 51-NN

MAY 3, 1938

CIGAR PROTECTION

"DOES 'CELLOPHANE' DO A BETTER PROTECTION JOB THAN FOIL?"

FROM TIME TO TIME, THIS QUESTION MAY BE SHOT AT ANY OF OUR REPRESENTATIVES HANDLING CIGAR ACCOUNTS (POSSIBLY OTHERS). THE PROPER ANSWER IS, "IT ALL DEPENDS -- UPON THE TYPE OF SEAL USED."

DESPITE RATHER AMBITIOUS CLAIMS TO SUPERIOR PROTECTION BY FOIL MANUFACTURERS RECENTLY, A TEST JUST FINISHED BY OUR TECHNICAL LABORATORY IN COOPERATION WITH A LARGE CIGAR ACCOUNT SHOWED TWO THINGS QUITE CONCLUSIVELY:

(A) THE NEW TIGHT SEAL FOIL WRAP GIVES PROTECTION ONLY SLIGHTLY BETTER THAN "CELLOPHANE", WHEN THE "CELLOPHANE" HAS A USUAL "SPOT" SEAL.

(B) WHEN THE "CELLOPHANE" WRAP IS GIVEN AN EQUIVALENT, COMPLETE SEAL, IT GIVES BETTER PROTECTION THAN THE NEW FOIL.

THESE TESTS ARE PICTURED ON THE ATTACHED CHART. USED DIPLOMATICALLY, THESE CHARTS SHOULD BE HELPFUL TO YOU IN ANY SITUATION WHERE FOIL IS REFERRED TO.

THE ANSWER IS THEN - IF A CIGAR ACCOUNT IS WILLING TO TAKE THE TIME AND TROUBLE TO ADJUST THEIR MACHINES TO DO A PROPER SEALING JOB ON "CELLOPHANE", THEY WILL GIVE THE CUSTOMER A BETTER PROTECTED CIGAR THAN FOIL.

C. F. BROWN, G.A.D.S.

H

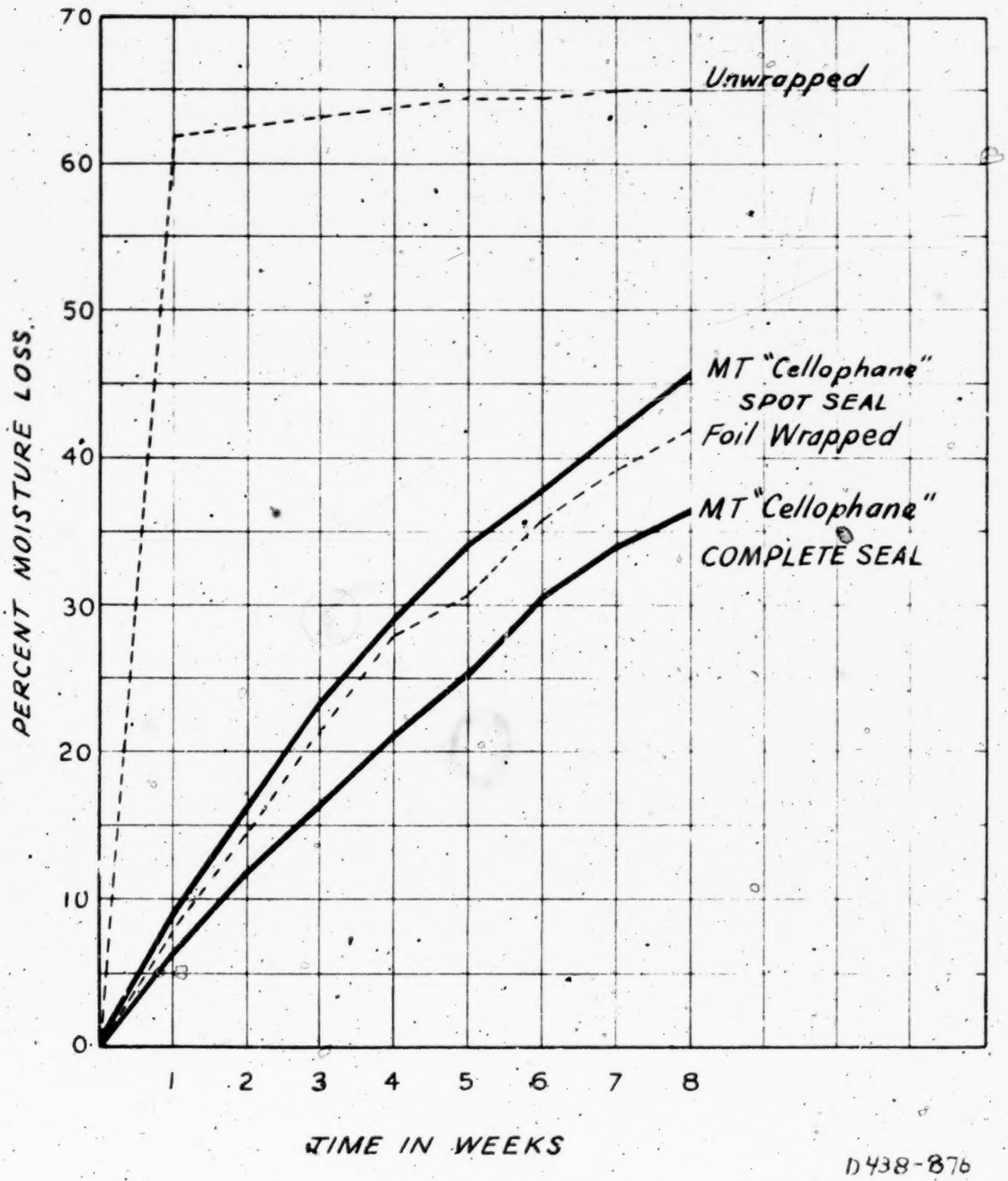
ATTACHMENT: CHART

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

"CELLOPHANE" DIVISION

M 5119

COMPARATIVE TESTS MEASURING MOISTURE LOSS OF CIGARS STORED AT 17% RELATIVE HUMIDITY. FIGURES ARE PERCENT OF ORIGINAL MOISTURE LOST DURING STORAGE



D438-876

M 5114

Defendant's Exhibit No. 197

R-12319

Box 17217 Cochran Jgl

DU PONT

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman D. E. Noel Date 1-13-39 No. 8

Firm Scotten Dillon Co. Bus. Tobacco Class 1-12

St. & No. 4885 W. Fort St. City Detroit State Mich.

Controlled by:

Final Decision by (Titles) W. Scotten, Pres. Contacted on this call? yes

Buyer Mr. Kean Contacted on this call? "

Others Contacted this call (Titles) W. Dillon, V.P. "

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Cons. lbs. this Calendar Quarter	If using competitive material, state type and reasons
Us		

Items wrapped in transparent sheeting: Reel, Plug 5 & 10¢ Sweet Mist.

Other products on which Cellophane could be used: (Note new products in work) Dan Patch, Peachy Scrap, extension smoking.

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

Samples.

d. Agreement account? no

e. Did you secure order? no

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
1-7-39	1-18	1-19	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1 - Sweet Mist 300 M.S.T. estimate 4000#. National dist. (a fine cut tobacco).

2 - Above. Pkg. Mach. Co. do not have right gears in as yet to handle the larger Dan Patch Pkg.

3 - Presented Jeves a new 15¢ item on this mkt. sold by better stores. Our survey indicates this item moving good.

No interest only a once over sale Scotten states. These brands come & go. "Friends" has died a natural death.

General discussion on Peachy scrap same sizes as Dan Patch. Will consider. Now using Regalite. May test in this area.

4 - Follow closely todays call.

3-15 39	P	Mr. W. Scotten. (Orders placed). Restate on "Peachy Scrap", mild interest, is highly cost conscious on this unit, however admit that sales are slipping & they need a new story to hold volume.
4-5 39	P	W. Scotten. Checked on new Scandia machine, which will handle Cellophane. This for Peachy Scrap. Will not consider Cellophane for this unit because of cost. Urged a market test; They may consent to this.

M 5024

2. Samples? (If no samples give sketch and complete overall dimensions of each size.)
3. "Cellophane"? Weight, color, type
4. Daily production each size?
5. Yearly production each size?
6. Is production seasonal?
8. Are wrapping machines now used?
9. Name of manufacturers?
10. Machine model and number?
11. If new machines required, shall machine manufacturers salesmen call?.

Defendant's Exhibit No. 198

R-17313

Bay 17217

Cellophane

DU PONT

Packing

TRADE REPORT

(Trade Analysis Copy)

Salesman	D. E. Noel	Date	4-12-39	No.	81
Firm	Scotten Dillon Co.	Bus.	Tobacco	Class	1-12
St. & No.	Scotten Ave. at Fort St.	City	Detroit	State	Mich.
Controlled by:					
Final Decision by (Titles)	Mr. W. Scotten APR 19 1939	Contacted on this call?	yes		
Buyer	Mr. Kean	Contacted on this call?	"		
Others Contacted this call (Titles)	Wm. Dillon, V.P.		"		
Changes in Mailing List?					

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Us	3000	

Items wrapped in transparent sheeting: Yankee Girl Plug 2 sizes. Reel Smoking Tobacco, Sweet Mist

Other products on which Cellophane could be used: (Note new products in work) long cuts and short cut tobaccos 5¢ Cigaretto tobacco. Roll 'Ems, Bid Way, Culture, Scrap tobacco.

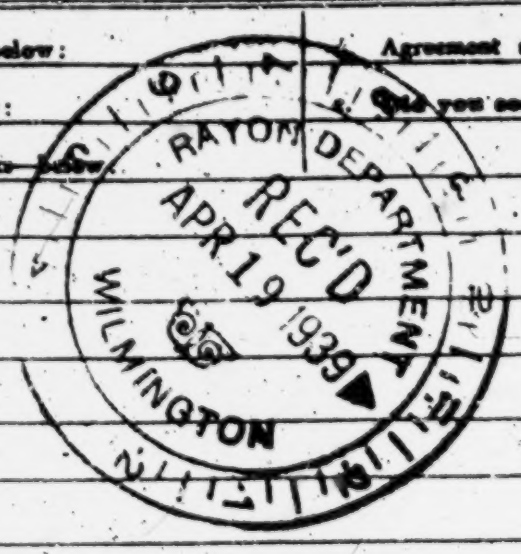
a. Specify sales tools used—below: Agreement account? no

b. Latest success story—below: Did you secure order? Placing

c. Service and general remarks—below:

Samples

RAYON DEPARTMENT REC'D APR 19 1939 WILMINGTON



Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
3-15-39	4-17	4-17	

CREATIVE WORK DONE

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
3-15-39	4-17	4-17	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1. Natural Leaf. 300 M.S.T. direct wrap. Estimate 500#.

2. Above.

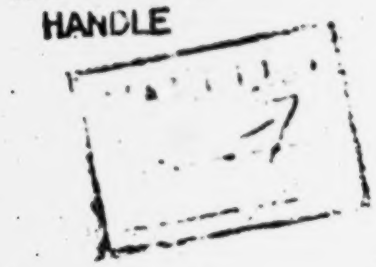
3. In checking further on the Scandia machine now being built, we find this size includes Big Way. Urged they consider Cellophane for this unit, printed to acceptance of Sweet Mist (Note: it is amusing to learn they have had a number of letters from consumers on this unit. Saw one today from an old guy who claims he's chewed Sweet Mist for 40 years and that he was damn glad he could at last get a fresh chew of the tobacco he likes best. (Note: Cowan, Would you like this letter?)

Scotten against idea of Cellophane on Big Way because of cost. However, Bill Dillon likes idea.

Came out and stated that inasmuch as they were curtailing their sales force, from 167 to less than 100 men, they should follow as we have suggested; that is, let their packages talk and do more selling for them. Scotten said they would discuss this later.

4. Follow re items coming up.

5. Note: Russell, Crowley. Mr. Hagendon died week before last. They are now trying to get a new man. Russell: do you know of anyone who has tobacco house knowledge of Rose and T Package machines?



OVER

4-26 39 BJC	P	W. Scotten. Checked on Scandia. This equipment now in. Went after Cellophane application on "Roll Your Own" and "Big Way". Every will adopt on one of these brands; not sure of sizes as yet. Calahan
5-17 39	P	W.Scotten. No progress. Followed on Peachy Scrap and Big Way (for Scandia application) States they are going to continue with Diaphane on these units because of cost. May use same machine on fine cut later. Harrington
6-28 39 WJH	P	W.Scotten, W.Dillon. General discussion as to tobacco industry. Pointed for Roll Your Own cigarette tobacco commenting on fact that this type of tobacco is becoming more attractive to sales volume because of new taxlaws on cigarettes in various cities and states. Told what others doing in the industry to gain this business. Mild interest only. States their roll "ems are all long cut and they feel sure the increase will be in grain tobacco which they do not make.
7/17 39	NC	Saw Bill Dillon only.
8-14 39	P	Wm. Dillon. Went after Roll 'Ems and Prep. Stressed advantages of freshness. No interest Up to Walter Scotten, who is out of city. States they may go back to cigarette business this winter.
9-14 39	NI	
9-22 39	P	Mr. W. Dillon. Followed on cigarette tobacco Roll 'Em brand. No interest; cost. Presented sample of Life for possible smoking tobacco talked very much.

		co which they do not make.
7/17 39	NC	Saw Bill Dillon only.
8-14 39	P	Wm. Dillon. Went after Roll 'Ems and Prep. Stressed advantages of freshness. No interest Up to Walter Scotten, who is out of city. States they may go back to cigarette business this winter.
9-14 39	NI	
9-22 39	P	Mr. W. Dillon. Followed on cigarette tobacco Roll 'Em brand. No interest; cost. Presented sample of Life for possible smoking tobacco
RJC		sampler. Liked very much.
10-6 39 JS	P	W.Scotten, Wm. Dillon, Len Dillon. NI "Regular" brand plug 300 M.S.T. Est. 1000#. General discussion on 5¢ Roll Your Own tobaccos. Outlined store findings; interested. Will undoubtedly adopt soon on complete line. States deliveries and increasing cost of Diaphane paper will undoubtedly aid their decision towards Cellophane. Has orders in for translucent paper up to 12-15-39 only. See Schaeffler's report.

M 5025

Sources of Supply	Est. Cons. Req. this Calendar Quarter	If using competitive material, state type and reasons
Us		

Items wrapped in transparent sheeting: Reel, Plug 5 & 10¢ Sweet Mist.

Other products on which Cellophane could be used: (Note new products in work) Dan Patch, Peachy Scrap, extension smoking.

a. Specify sales tools used—below:	d. Agreement accepted? no
b. Latest success story—below:	e. Did you secure order? no
c. Service and general remarks below:	

Samples.

Date of Last Prod. Call	Rec'd at District Office	Date Typed	Copies to
1-7-29	1-18	1-19	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's prompt action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1 - Sweet Mist 300 M.S.A. estimate 4000#. National dist. (a fine cut tobacco).

2 - Above. Pkg. Mach. Co. do not have right gears in as yet to handle the larger Dan Patch Pkg.

3 - Presented Joves a new 15¢ item on this mkt. sold by better stores. Our survey indicates this item moving good.

No interest only a once over sale Scotten states. These brands come & go. "Friends" has died a natural death.

General discussion on Peachy scrap same sizes as Dan Patch. Will consider. Now using Regalite. Any test in this area.

4 - Follow closely todays call.

5 - None.
Would write on Sweet Mist.

1-31	P	W. Scotten. No progress. Decision against "Cellophane" on Dan Patch went to Regalite on cost basis. However sweet Mist will be held in Cellophane. Checked on action of
39		cigarette tobacco. Not interested at present
R.J.C.		Says they can't stand cost on this item.
		Suggested they consider Culture Brand
		Smoking Tobacco in Cellophane on the basis
		of getting better display & possibly re-
		vamping the pkg. somewhat for new sales
		stimulus. Not interested at present.
		(Note W. J. Harte: Price Regalite now down
		3-1/2¢ lb. selling at 24¢).

OVER

M 5c 407

M 5024

2. Samples? (If no samples give sketch and complete overall dimensions of each size.)
3. "Cellophane"? Weight, color, type
4. Daily production each size?
5. Yearly production each size?
6. Is production seasonal?
8. Are wrapping machines now used?
9. Name of manufacturers?
10. Machine model and number?
11. If new machines required, shall machine manufacturers salesmen call?

Defendant's E

NO

Cellophane

DU PONT

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SE
ADV. SECT.	PLANNING

Salesman MILES-LOCK Date 2-27-39 No. 80

Firm WEBSTER EISENLOHR Bus. TOBACCO Class 1-18

St. & No. 185 Madison Ave. City NYC State NY

Controlled by:

Final Decision by (Titles) J.F.Cullman, Pres. Contacted on this call? Ne

Buyer J.Kemper, Sec. Contacted on this call? Yes

Others Contacted this call (Titles)

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sourcer of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
duPont	7000	
Reynolds	1000	Foil-advertising subsidy.
Humitube	500	

Items wrapped in transparent sheeting:

Cigars

Other products on which Cellophane could be used: (Note new products in work) Same

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Agreement account? Yes

e. Did you [illegible] No

RAYON DEPARTMENT REC'D MAR 8 1939 WILMINGTON

Checked on plant operations-they advise Detroit plant had been shut down but this only a temporary seasonal move and will be in question again shortly.

We covered further progress in return to visible wraps on cigars by mfgrs who had switched to foil and urged early return to "Cellophane" on their present foil wrapped brands, pointing out loss against agreement by continuing them in opaque wrap- again

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
2/16/39	3/3/39	3/6/39	evw

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

showed our Saturday Eve.Post ad on cigars and gave further details of retail store surveys to show growing consumer preference for "Cellophane" on cigars".

Kemper said they are reaching the "on the price" stage as regards foil or "Cellophane" on Cinco and

Exhibit
199

Date 2/25 Decrease Last Qtr. vs. Previous Qtr. 35,000 Competitive Sales—This Qtr.

Remarks: Falling off in business. Use of foil. Reading, Pa. plant closed.

When requesting Package and/or Machine Development, write ... Question No. 5.

PACKAGE DEVELOPMENT REQUEST

1. Product?
2. Date wanted?
3. Retail Price?
4. When will samples be sent?
5. Description of development desired; type of wrap, label, containers, etc.
6. Type of Cellophane?
7. Machine wrapped?
8. Return direct to account? If to you, where?

MACHINE DEVELOPMENT REQUEST

1. Product?
2. Samples? (If no samples give sketch and complete overall dimensions of each size.)
3. "Cellophane"? Weight, color, type
4. Daily production each size?
5. Yearly production each size?
6. Is production seasonal?
7. Average retail price each size?
8. Are wrapping machines now used?
9. Name of manufacturers?
10. Machine model and number?
11. If new machines required, shall machine manufacturers salesmen call?

Defendant's Exhibit No. 200

R-12913

DUPONT

Cellophane TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman J. E. CLARK Date 4/25/39 No. 165

Firm BLOCH BROS. Bus. Chew. Tob. Class 1-12

St. & No. 4030 Water St. City Wheeling State W. Va.

Controlled by:

Final Decision by (Title) J. A. Bloch, Pres & H.S.Bloch, V.P. Contacted on this call? Yes

Buyer H.B.Quarrier, P.A. Contacted on this call? N

Others Contacted this call (Title) Mr. Harris, Asst., V.P., Mr. Frankston, V.P., S.M.

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Conv. Req. this Calendar Quarter	If using competitive material, state type and reasons
Not using		

Items wrapped in transparent sheeting: "Mail Pouch" Chewing Tobacco.

Other products on which Cellophane could be used: (Note new products in work)

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Agreement account? NO

e. Did you secure order? NO

Store sufveys

Moistureproof test

Photos

Samples before and after

Barn Display

"Invisible Ingredients"

Cons. Ads.

RECT APR 28

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
3/28/39	4/27/39 DML	4/27/39	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1 & 2. None.

1/21/39	P	du Pont - none. Harris - Brought in store surveys to stress value of modern packaging on the retail counter. Agreed we are right but it will take another price reduction at least before adoption.
	3	
NOTE		The subject have purchased the Pollack Wheeling Stokie plant - will follow with Mr. Quarrier next month.

4. When will samples be sent?
7. Machine wrapped?
8. Return direct to account? If to you, whose?

MACHINE DEVELOPMENT REQUEST

1. Product?
2. Samples? (If no samples give sketch and complete overall dimensions of each size.)
3. "Cellophane"? Weight, color, type
4. Daily production each size?
5. Yearly production each size?
6. Is production seasonal?
7. Average retail price each size?
8. Are wrapping machines now used?
9. Name of manufacturers?
10. Machine model and number?
11. If new machines required, shall machine manufacturers salesmen call?

Defendant's Exhibit No. 201

R-12915

DUPONT

Cellophane
TRADE REPORT
(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman J.E.CLARK & R.E.SIDWELL Date 11/20/39 No. 374

Firm BLOCH BROS. Bus. Chew.Tob. Class 1-12

St. & No. 4030 Water St. City Wheeling State W.Va.

Controlled by:

Final Decision by (Title) J.A.Bloch,Pres. Contacted on this call? yes

Buyer H.D.Quarrier Contacted on this call? no

Others Contacted this call (Titles) W.J.Frankston,V.P.,S.M.

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Crystal	1000	price differential

Items wrapped in transparent sheeting: "Mail Pouch" chewing tobacco.

Other products on which Cellophane could be used: (Note new products in work)

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Agreement accepted? no

e. Did you secure an order? no

Store surveys.

PDD units of "Mail Pouch".

"Air Mail" D.P.

Salesmen samples. Cons. Ads.

20th price reduction - duPont has initiated, stressed its significance as to trend of modern packaging - refigured costs.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
9/27/39	11/22/39 DML	11/22/39	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

Present wax paper #30 costs 8½¢ per lb. and has a yield of 13.714 sq. in. to lb.. size of sheet

12-27-39 P. DuPont none. Frank ~~store~~ Ston- ~~Store~~ surveys to point out value of protection eye appeal-display ~~value~~ for chewing tobacco-Urged-Adoption in Southwest ~~where protection is very~~ important-

(R) At present-No-Stogie-Machine wrap-with cigar bands.

~~(R) Working on idea now-will follow.~~

M 5138

3. "Cellophane"? Weight, color, type
4. Daily production each size?
5. Yearly production each size?
6. Is production seasonal?

10. Machine model and number?
11. If new machines required, shall machine manufacturers salesmen call?

Defendant's Exhibit No. 202

495

R-12315

DU PONT

Cellophane

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman A. C. Cloudsley Date 6-21-39 No. 193

Firm Crimson Coach, Inc. Bus. Tobacco Class 2-6

St. & No. 3224 Albion St. City Toledo State Ohio

Controlled by: Associated with Midwest Tob., Cinn.

Final Decision by (Titles) E. C. Cannon, Pres. Contacted on this call? yes

Buyer " Contacted on this call?

Others Contacted this call (Titles)

Changes in Mailing List?

Type of Call—Productive X Service Camp.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Dob.	A 500	none
Diem&Wing	100	
Us	none this quarter	

Items wrapped in transparent showing: Club Lide and Coach and Four smoking

Other products on which Cellophane could be used: (Note new products in work) 15¢, 10¢ and samples. Crimson Coach chewing. 15¢ Double Check chewing.

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

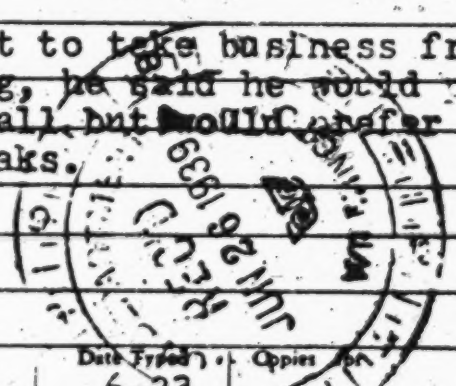
d. Agreement account? no

e. Did you secure order? no

(a) None (b) None

(c) Made no particular effort to take business from Diem & Wing but in discussing, he said he would place direct. Present poundage small but would prefer direct in case something breaks.

RECD JUN 26 1939



Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
4-13-39	6-23	6-23	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1 - 2. Irish Aromatic smoking 20¢ Us 500 Dob 500

11-22	P	Ed Cannon, Pres. On basis new price, reopened
39		on Crimson Coach sweet scrap. Figured costs,
		but he would not compare with Riegel, saying
		Greenwald (Cinn.) dead set against Cellophane
		on basis too much protection. Pointed could
		give L.S.T., no trouble with Pinkerton, etc.
		May be actual negative but looks like a stall
		11 3427

1. Product?
2. Date wanted?
3. Retail Price?
4. When will samples be sent?
5. Description of development desired; type of wrap, label, containers, etc.
6. Type of Cellophane?
7. Machine wrapped?
8. Return direct to account? If to you, where?

MACHINE DEVELOPMENT REQUEST

1. Product?
2. Samples? (If no samples give sketch and complete overall dimensions of each size.)
3. "Cellophane"? Weight, color, type
4. Daily production each size?
5. Yearly production each size?
6. Is production seasonal?
7. Average retail price each size?
8. Are wrapping machines now used?
9. Name of manufacturers?
10. Machine model and number?
11. If new machines required, shall machine manufacturers salesmen call?

Defendant's Exhibit No. 203

497

R-12815

DUPONT

Cellophane TRADE REPORT

(Trade Analysis Copy)

SALES CDR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman P.A.HARBISON Date 11/3/39 No. 287

Firm DAVID FORRY TOBACCO CO. Bus. CHEW. TOB. Class 1-12

St. & No. 125 S. Queen St. City York State Pa.

Controlled by:

Final Decision by (Title) Harry S. Strine Contacted on this call? yes

Buyer " Contacted on this call?

Others Contacted this call (Title)

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Conv. lbs. this Calendar Quarter	If using competitive material, state type and reasons
not using		

Items wrapped in transparent sheeting: none

Other products on which Cellophane could be used: (Note new products in work) Chewing tobacco - several brands.

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Agreement account? no

e. Did you secure order? no

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
10/2/39	11/8/39 fe	11/7/39	

Other products on which Cellophane could be used: (Note new products in work)	Same
a. Specify sales tools used—below:	d. Agreement account? Yes No
b. Latest success story—below:	e. Did you [illegible]
c. Service and general remarks—below:	

RAYON DEPARTMENT REC'D MAR 9 1939

Checked on plant operations-they advise Detroit plant had been shut down but this only a temporary seasonal ~~move and will be in question again shortly.~~

We covered further progress in return to visible wraps on cigars by ~~mfgrs who had switched to foil and urged early return to "Cellophane"~~ on their present foil wrapped brands, pointing out loss against agreement by continuing them in opaque wrap- again

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
2/16/39	3/3/39	3/6/39	eyw

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

showed our Saturday Eve.Post ad on cigars and gave further details of retail store surveys to show growing consumer preference for "Cellophane" on cigars".

Kemper said they are reaching the "on the price" stage as regards foil or "Cellophane" on Cinco and Girard brands-but that the advertising subsidies and promotion help given them by the foil people, has caused them to hesitate on a return to "Cellophane"- we stressed fact that these concessions mean nothing if they don't sell more cigars for them, but Kemper said their sales had not been so bad on these brands.

He further said that their decision would depend on the advertising or other cooperation given them by our Company as he flet that a return to "Cellophane" on these brands would be a "feather in duPont's cap".

We referred to our trade paper advertiising cooperation and Atlantic City Displays but they are anxious to have something different from that- We agreed to discuss the matter with our Hdqtrs. office and to advise him later.

We then suggested they augment their present line with several new smoking tobacco units, overwrapped in MT-and mdsed in attractive counter display carton but he said they were not interested in adding any new items to the line at present.

W.C.Lock- Will appreciate your following through on Kemper's request to determine what form of cooperation, if any, we can give them on their return to "Cellophane" on Cinco and Girard brands. Handled by

OVER

H. 5107 N. Y. Dist. Sales

Other products on which Cellophane could be used: (Note new products in work)

a. Specify sales tools used—below:	d. Agreement accepted? NO
b. Latest success story—below:	e. Did you secure order? NO
c. Service and general remarks—below:	

Store sufveys

Moistureproof test

Photos

Samples before and after

Barn Display

"Invisible Ingredients"

Cons. Ads.

REC'D APR 28

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
3/28/39	4/27/39 DML	4/27/39	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1 & 2. None.

3. Covered broad story of "Cellophane", value of sparkling moistureproof protection and display value. Cited store surveys to point out need for more protection and bringing package appearance up to date with their modern means of bill-board advertising. Cited value of display - "out-of-sight-out of mind". Mr. Bloch & Frankston interested, but still feel the time isn't right for adoption.

4. Follow above.

5. None.

5/23/39	R	du Pont none - Mr. Frankston - Mr. Harris - "Mail Pouch" - Covered broad story ~~of "Cellophane" stressing value of bringing~~ their product to the consumer as fresh as possible. Our moistureproof test used. ~~(R) They still argue that "Cellophane" is~~ not as moistureproof as their wax paper wrap -- Used our test. Mr. Frankston said ~~their tests showed otherwise.~~ Urged him to let writer see results of their test and he wouldn't because I believe he doesn't ~~want to believe what is a fact.~~ -- Will follow.

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Agreement accepted? no

e. Did you secure order? no

Store surveys.

PDD units of "Mail Pouch".

"Air Mail" D.P.

Salesmen samples. Cons. Ads.

20th price reduction - duPont has initiated, stressed its significance as to trend of modern packaging - refigured costs.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
9/27/39	11/22/39 DML	11/22/39	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

Present wax paper #30 costs 8¼¢ per lb. and has a yield of 13.714 sq. in. to lb., size of sheet 5x13¼".

1 & 2. None.

3. Adopt for coast and south western states where weather is a problem in keeping tobacco moist enough - plus added eye appeal to create new customers thru impulse buying.
R. Cost too great - but reduction brings adoption nearer.
"Air Mail" a new item possibility to start from groun up & price so as to realize profit desired - stressed value of pkg. brought up to date.
R. This is what they did with new "wow" pkg. 3½ oz- retails at 15¢ - twice as much tobacco & first sweet chew they have brough out - but cost of "Cellophane" too great to adopt. Did not use "Air Mail" due to fact du Pont suggested because they could not use "Cellophane".
Stogies - machine wrap is now an assured thing with use of bands - machine companies working with subject Have not decided on what make they will use. It will be 6 months before adoption is possible.
Competitive situation on tubes for Pollach Stogies - Humitube lost - due to Crystal tube giving the subject a substantial reduction in price over Humitube price.

4. Follow above.

5. None.

Date 11/6/39 Business Last Qtr. vs. Previous Qtr.

Competitive Sales—This Qtr. 500# C.

Remarks

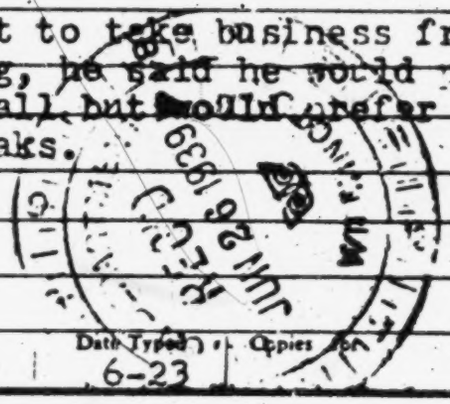
5. Yearly production each size?
6. Is production seasonal?

turers salesmen call?

Other products on which Cellophane could be used: (Note new products in work) 15¢, 10¢ and samples. Crimson Coach chewing, 15¢ Double Check chewing.

a. Specify sales tools used—below:	d. Agreement account? no
b. Latest success story—below:	e. Did you secure order? no
c. Service and general remarks—below:	

(a) None (b) None
(c) Made no particular effort to take business from Diem & Wing but in discussing, he said he would place direct. Present poundage small, but would prefer direct in case something breaks.



Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies
4-13-39	6-23	6-23	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1 - 2. Irish Aromatic smoking 20¢ Us 500, Dob. 500 ann. (Dob. bag liner, M.S.T. overwrap tin). He has developed Irish mixture at one half cost imported and figures to do a sizeable business.

3. Chewing tobacco. Volume items. Considerable of decision rests here altho Midwest has their 2¢. Endeavored to establish principle chewing tobacco is displayed in many outlets, can be displayed in many more and insofar displayed Cellophane of value in reminder sales for brand changers, and even fresh quality appearance influence to those wedded to one brand. Cannon is more merchandising minded than Midwest and preserves open mind. States however doing fair job with Reigel glassine and feels cost pretty high considering fact they overweight brands. He isn't sold enough to back Midwest cost complex.

4. Follow

5. None.

Date 8/3/39 Previous Last Qtr. vs. Previous Qtr. 100 Competitive Sales—This Qtr.

Remarks: Changed to Du Pont jobber.

10-18-39	P	Ed Cannon, Pres. He is doing fair with smoking brand, but no volume to us. Tackled him again on volume sweet scrap brands, but get the same story as at Midwest - out of question with rising costs.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
10/2/39	11/8/39 fe	11/7/39	

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1, & 2. None.

3. Price reduction, revised cost figures - present wrap of glassine costs 18¢ per gross, "Cellophane" now 23 1/2¢ -- difference of .055 per gross. Reiterated need to consider cost factor on broad basis, absorbing difference in (a) advertising (b) reduction in returns (c) sampling (d) display value (3) consumer and dealer good-will -- Again proposed sales test, selected area, not asking for immediate adoption all areas.

R. Continues to maintain friendly but bull-headed attitude on cost -- will not promise to make sales test altho he concedes fairness and wisdom such a step.

4. Keep after for sales test.

5. None.

11/22/39	P. Harry Strine - review cost figures, followed on proposed sales test. Retains adamant attitude, direct cost conscious, says trade do not want. Situation requires constant follow up!	

M 5028

Defendant's Exhibit No. 204

CC: J. E. DEAN-C. F. BROWN
R. J. CROWLEY, New York
W. J. HARTE
H. D. HARRINGTON

August 2, 1946

TO: W. G. HUNTER

FROM: V. M. MORREL

Subject: COMPETITIVE FILM AND QUALITY SPECIFICATION PROGRAM
PHILIP MORRIS & COMPANY

During a visit to the subject company's Richmond factory on July 31, 1946, a few packages of Philip Morris cigarettes wrapped in Pliofilm were seen on display in the operating area.

Mr. Turnley, who is assigned to special operating problems at Philip Morris, told the writer that several sample rolls of Pliofilm had been sent to them for test work. He indicated that attempts to wrap cigarettes on their standard Molin machines with the film were not very successful because of a tendency of the film to soften and break down over the range of temperature which is obtainable with present heater plates. Some packages were wrapped successfully by turning off the heaters and running at a lower temperature. Sealing was satisfactory over a narrow range of temperature.

This preliminary work was done to determine the feasibility of making adjustments to a machine for further tests. Apparently, plans are being made to continue the work.

Samples of the four grades of Pliofilm under study were obtained and will be put through routine laboratory tests for competitive film. The films were identified in core labels as N-2, .0012 gauge, N-2, .00075 gauge, N-0, .0012 gauge and N-0, .00075 gauge. Two packages of cigarettes wrapped in one of the films were also given to the writer.

Philip Morris is currently overwrapping cigarettes for Vending machine operators with wax paper. In a discussion about this material with Mr. Davis, Chief Chemist at Philip Morris, he mentioned that the paper being supplied to them by Regal had a "MPV" equivalent to 300 MT-31 and was giving good results from a protection standpoint. Samples of this material have been sent to the Technical Service Laboratory for PV evaluation.

A program looking towards establishing specification standards for all incoming supplies, including Cellophane, has been undertaken by Philip Morris. The work on Cellophane is in the development stage and no standards have been established. However, all shipments are being sampled as received. Analytical results and operating data are being compiled for study, with reports being sent to both their Richmond and New York managements.

In going over some of their laboratory reports with Mr. Davis, it was noticed that greater variation in coating thickness and "MPV" is shown than should be expected in 300 MT-31. These points are apparently being watched very closely. Reports on Sylvania film showed the same variation, greater coating thickness, a somewhat higher permeability factor and a lower package yield per pound.

Copies of sample reports on Du Pont film are attached. M 314

W. G. HUNTER
Concluded

Some of the analytical methods being used by their laboratory give erroneous results. For example, moisture is determined by drying samples in an oven and calculating moisture content on a weight change basis. Both moisture and S-2 are driven off by this method, and the final result is not quantitatively representative of either. Other methods are less accurate than those used in our laboratories.

Mr. Davis has agreed to hold any rolls on which they obtain abnormal results for our inspection. This will provide a means of following the progress of their specification work and, at the same time, give us a chance to suggest refinements in their analytical methods if this becomes desirable.

M 314

VWT:tr

7-17-46

ANALYSIS OF DU PONT MT-31 CELLOPHANE RECEIVED JUNE 27, 1946

Dated	All Samples dated 6-24-46					
Reel No.	12J2229	16H5001	13H5076	0815377	15H5069	1615154
% Coating (1)	9.66%	9.25%	8.10%	6.94%	8.16%	8.92%
M. P. V. (2)	3.75	-	-	5.19	2.21	-
% Moisture(3)	7.86%	6.83%	5.90%	7.33%	7.41%	6.59%
Thickness	.00086"	.00092"	.00087"	.00087"	.00089"	.00088"
Width	3-5/16"	3-5/16"	3-5/16"	3-5/16"	3-5/16"	3-5/16"
Wt. 10 ft.	8.3595g	8.7805g	8.4044g	8.5082g	8.5385g	8.2792g
Sq. In. Per Lb.	21,600	20,510	21,450	21,180	21,130	21,820
Packs Per Lb.	802	762	796	786	784	812

Remarks: No specifications have been set up on Cellophane at present, but the MPV are a little higher than usual.

CC: Mr. Dinwiddie
Mr. Strembel
Mr. Atkins

S. W. Pleasants

(1) Based on weight of film as received.

(2) Grams of moisture-vapor per sq. meter per 24 hours (100% to 40% R.H. at 85°F.).

(3) Determined by drying in an oven, and based on weight of film as received.

M 314 A

7-18-46

ANALYSIS OF DU PONT MT-31 CELLOPHANE RECEIVED JULY 9, 1946

Dated All samples dated July 1, 1946

Reel No.	0815341	15B2320	16H5074	13J5479	13J5481	13H5051
% Coating	8.26%	8.34%	8.74%	8.92%	9.46%	8.44%
M. P. V.	3.39	-	3.54	-	1.43	-
% Moisture	7.18%	6.78%	6.88%	6.51%	6.67%	6.83%
Thickness	.00091"	.00093"	.00091"	.00090"	.00089"	.00089"
Width	3-5/16"	3-5/16"	3-5/16"	3-5/16"	3-5/16"	3-5/16"
Wt. 10 ft.	8.5285g	8.8250g	8.5800g	8.5384g	8.5846g	8.4580g
Sq. In. Per Lb.	21,200	20,450	21,050	21,180	21,050	21,310
Packs per Lb.	788	761	783	785	784	793

Remarks: No specifications have been set up on Cellophane at the present, but the MPV are a little higher, than usual

CC: Mr. Dinwiddie
Mr. Strembel
Mr. Atkins

E. . Pleasants

M 314 B

4570

423

Defendant's Exhibit No. 205

December 2, 1946

TO: R. J. CROWLEY, NEW YORK
H. C. BROEMS, CHICAGO
R. E. SIDWELL, ATLANTA

FROM: E. J. HARTE

COMPETITION

Ref: Reynold Foil Cigarette Package

We have been informed by a source which we consider reliable, that the Scandia Machine people are presently building four machines for the manufacture of the reference package.

It has been rumored that one of these machines was to go to R. J. Reynolds, and one to Brown & Williamson. Our informant did not know for whom the other two were being built.

We are attempting to check up through the machine company to get more information on this subject. On the other hand, we want you to keep very close to your cigarette accounts and determine if possible their interest and intent with regards to this foil pack. We cannot afford to be complacent, despite the feeling of all of us, that Cellophane is a superior product for packaging cigarettes.

EJH:JL

FILE COPY

M 5248

Defendant's Exhibit No. 207

pound processed on the aluminum surface. It uses no glue. It eliminates two additional operations now required on the conventional package to apply the printed paper label or cup and the cellophane wrapper. And in its single wall it provides a moisture and aromatic retentive barrier said to be twice as effective as the four layers of material that heretofore have surrounded the 20's pack.

Every leading cigarette manufacturer is well aware of this development, in active progress for the last two years, and is currently watching, testing and waiting. If this new package lives up to its indications so far, it may well revolutionize packaging procedures in an industry that last year used in excess of 39 million dollars worth of materials for unit packages.

In appearance (except for the brilliance of the aluminum surface and the elimination of cellophane overwrap), the new package is deceptively similar to the old one. To understand the difference, take a standard pack from your pocket and compare it with the actual flat sample of the new Raleigh pack which you see on the opposite page.

In the conventional pack you have: first, an overwrap of cellophane; inside this, a printed paper label or cup, glued with liquid adhesive; finally, an inside wrapper of foil and paper—four separate layers of material requiring four packaging operations.

The fact is that although the cigarette makers have improved their packages periodically over the last 40 years, the improvements have usually taken the form of an added layer of material for added protection, so that the package has "just grown," rather than starting afresh with a basically new material. This policy has seemed necessary because any revolutionary change that would suddenly outmode the machines in which the industry has hundreds of millions of dollars invested would be unthinkable. The significance of the new aluminum pack is that it requires no new machinery, but an adroitly skillful engineering adaptation of mechanism to existing machinery that performs the whole operation and obviates the cellophane overwrap.

The new package combines all four of the protective elements of the old in a single composite sheet comprised of aluminum foil laminated to both surfaces of paper to serve as a core. Existing automatic cigarette-wrapping machinery can be converted to handle it under inventions embodied in patent applications held by the supplier of this new material. The composite sheet is full-color printed by rotogravure (seven colors for the Raleigh packages) on the outside aluminum surface in one gravure high-speed operation by the supplier. During the printing, a new plastic coating having high gloss is applied over the brilliant-color inks to protect them against scuffing and heat. This is followed by the further application of a new heat-sealing

CONVERTED MACHINE, showing continuous steel bands or "tractor sealers" for effecting strong, tight end seals. Conversion begins with removal of many parts, greatly simplifying operation and completely eliminating mechanism for applying paper label or cup. Packages emerge complete. There is no additional overwrapping on other equipment.

H 108
Dry Sales
W B Hunter
Letter
Hdlg
L

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Brown & Williamson Tob. Corp.	H. C. Eastmond	1-8-47

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1600 W. Hill St.	2-4-48	British American Tob. Co. / Local
CITY-ZONE-STATE	CLASS	INDUSTRY
Louisville, Ky.	1-12	Cig. and tob. prod.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., LA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	400 M	Syl.	Syl.	MT	20 M			
Milp.	6 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

RETURN TO CELLOPHANE, TRADE ANALYSIS

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
T. V. Hartnett	Pres.		M	
R. D. Linthicum	Dir.Mfg.	x	M	
W. R. Hendricks	P.A.	x	M,S	
H. B. Pritchett	Asst.P.A.	x	S	

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	* R S C	ANNUAL POTENTIAL
		1		
TOTAL	0			

B-12727—REV. 11-47 * B-ROLLS S-SHEETS C-CONVERTED

M 5110

1. a. Check their experimental development foil packaged cigarettes.

b. Discuss multiple unit 3 pkges. for grocery store distribution.

c. Cover their request for cylindrical fibre shipping containers for cellophane.

2. a. They now have 3 packing machines adapted for foil, 2 Louisville, 1 Petersburg.

They plan to run a market test on foil packaged Raleighs in a month or two. This test similar to Kools, altho they will use different market locations, very probably. I am sending proof package foil Raleighs to Chicago office.

B & W accelerated laboratory tests simulating 3 mo. period show moisture loss foil pkg. approx. 1/2 that of cellophane pkg. Linthicum attributes some of the effectiveness of foil to fact that wrapper lays flat against ends of cigarettes and also sides, preventing moisture loss within the package. It also prevents tobacco falling out at ends of cig. according to him.

They have had some trouble with thermoplastic coating on edge of foil rolls. There are limitations as, to colors that can be reproduced on foil. The grey of B & W cork tip pkg. can't be duplicated.

They have received a very favorable report on foil pkges shipped to Panama. (Over)

4572

425

Defendant's Exhibit No. 206

In the near future Modern Packaging magazine will break with article on this foil package cig. Photos from B & W plant. All tehhnical information supplied by Reynolds Metal.

According to Linthicum, Reynolds spending a million dollars on equipment for producing this wrap and expect apply its use in fields other than cigarettes. They expect to overcome present high cost factor.

"A humidor Pack" appearing on Raleigh package is controlled by B & W.

Some years ago B & W produced a foil pkg. of Wings cigarettes called "Humoco Pack".

b. Discussed advantages of multiple unit pkg. less than carton - 3 packages. Hendricks said that Philip Morris plans to market a week-end pkg. consisting of 5 individual packages. He did not indicate that B & W was interested in a unit of this type.

c. Explained reasons for standard packaging - cartons narrow width roll. Hendricks agreed to consider matter closed.

3. Prithhett said his trip thru our Richmond plant was most interesting and he was very appreciative. They have not yet received delivery Scandia machines expected in Jan.

5. a. Please send H. B. Pritchett 3 more copies of "Characteristics & General Uses of Standard Types Cellophane".

C. J. HANDLING

4573

426

REPORT OF CALL

1. Objective (reason for making call).

2. Specific results of No. 1.

3. Other information, such as:

   Assistance given and/or economy suggestions.

   Objective or objectives developed during call.

   Account knowledge—such as facts, re machine data, personnel, products, production, markets, merchandising methods, etc.

   New items (include type film and kind of package).

   Future plans—new policies—new products, etc.

   Competitive information.

   Complaints.

   Success stories.

   Sales status—(explain reason for any important change in customer's purchases).

4. Mailing list changes—customer's old name or address.

5. Action needed by (a) District Office.
   (b) Home Office.

4109

REVOLUTIONARY not only in form, but in appearance. The familiar portrait of Sir Walter Raleigh in full color on gleaming aluminum brings new excitement to tobacco counter. All protective elements are combined in composite sheet.

3120

METAL-CLAD CIGARETTES

The first basic change in 40 years: a single sheet—aluminum inside and out—forms package on existing machinery, giving increased protection and eye appeal

The eyes of the two-billion-dollar cigarette industry are focused today on Detroit. There Brown & Williamson Tobacco Corp. is pioneering in a one-city introduction of the first basically new package for the standard "20's" since cigarettes first became the universal American smoke. By mid-April, the Detroit change-over is expected to be complete and from there the new cigarette package is scheduled to move into other markets.

Introduced on Raleighs, the Alumidor pack (as Brown & Williamson aptly have named it) is a semi-rigid metal package of aluminum that provides, for the first time, the whole package in one sheet of material. Although it has a thin core of paper, for better handling qualities, the laminated sheet has otherwise the look and the ductility of a fairly heavy gauge of solid aluminum. It is fed from a roll to the cigarette-packaging machine, formed and folded in much the same manner as the conventional wrap—but electronically heat sealed at all edges by means of a special plastic com-

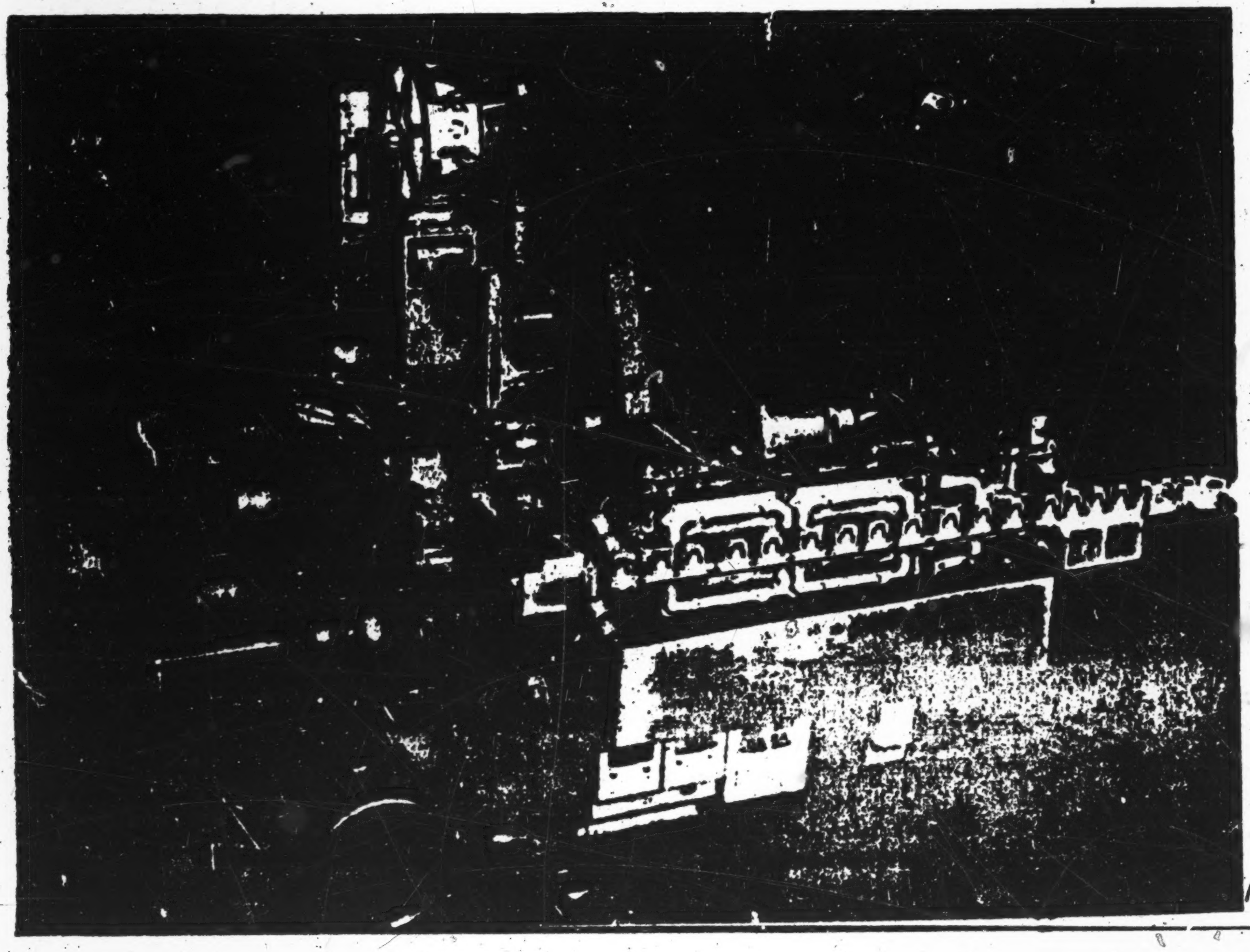
M 5249

or cup, glued with liquid adhesive; finally, an inside wrapper of foil and paper—four separate layers of material requiring four packaging operations.

The fact is that although the cigarette makers have

the supplier. During the printing, a new plastic coating having high gloss is applied over the brilliant-color inks to protect them against scuffing and heat. This is followed by the further application of a new heat-sealing

CONVERTED MACHINE, showing continuous steel bands or "tractor sealers" for effecting strong, tight end seals. Conversion begins with removal of many parts, greatly simplifying operation and completely eliminating mechanism for applying paper label or cup. Packages emerge complete. There is no additional overwrapping on other equipment.



M 524

THIS IS ALL THERE IS TO IT. This single sheet is the complete package for one pack of Raleighs, heat sealed by specially patterned thermoplastic-coated strip which does not show on sample.

compound in a pattern conforming to the closure seams of the finished package.

The new packaging material, registered by its manufacturer under the name of Ply-Seal Pak, and the conversion of machinery to handle it are the culmination of intensive development work by Reynolds Metals Co.

Hundreds of different types of composite sheet formulations were tried and countless formulations of plastic coatings and heat-sealing compounds were tested before the currently adopted efficient combination was attained.

The machine problem

Briefly, the standard cigarette-packaging machine operates in this manner: It works by a complex system of cam action and engaging wheels or turrets. Cigarette the standard cigarette-wrapping machine operation.

The conversion began with the removal of many parts, greatly simplifying the operation of the standard machine. First of these was the elimination of the complete mechanism for applying the paper label or cup, then placing heat-sealing units in each of the 12 stations of an existing forming turret for side-sealing the new aluminum body. New electronic controls were installed for registration and cutting the new aluminum blanks which are fed from a modification of the feed device formerly used for the paper-foil inner wrap. A simple solution of the problem of converting the feeding device to prevent the new material from buckling and wrinkling in the machine was accomplished.

Perhaps the most outstanding feature of the ne

minute, although on its initial runs Brown & Williamson have been running the machines at a slightly slower rate.

It is claimed that the standard cigarette-packaging machine can be readily converted in the tobacco-packer's plant without removal from its present location. The conversion steps comprise the removal of a considerable number of parts, a portion of which are replaced by special parts provided by the supplier of the new aluminum packaging material. The converted machine provides excellent accessibility to the entire working tools of the machine, which is conducive to lower maintenance cost.

Package costs

So far, because of the development work and the initial cost of the material, Brown & Williamson say the new wrap is costing them more, naturally, than the standard wrap, but they expect these costs to be reduced as production increases and pioneering expense is amortized. (The cost of packaging materials for the conventional cigarette package is currently reported in the trade to be about $2.20 per thousand.)

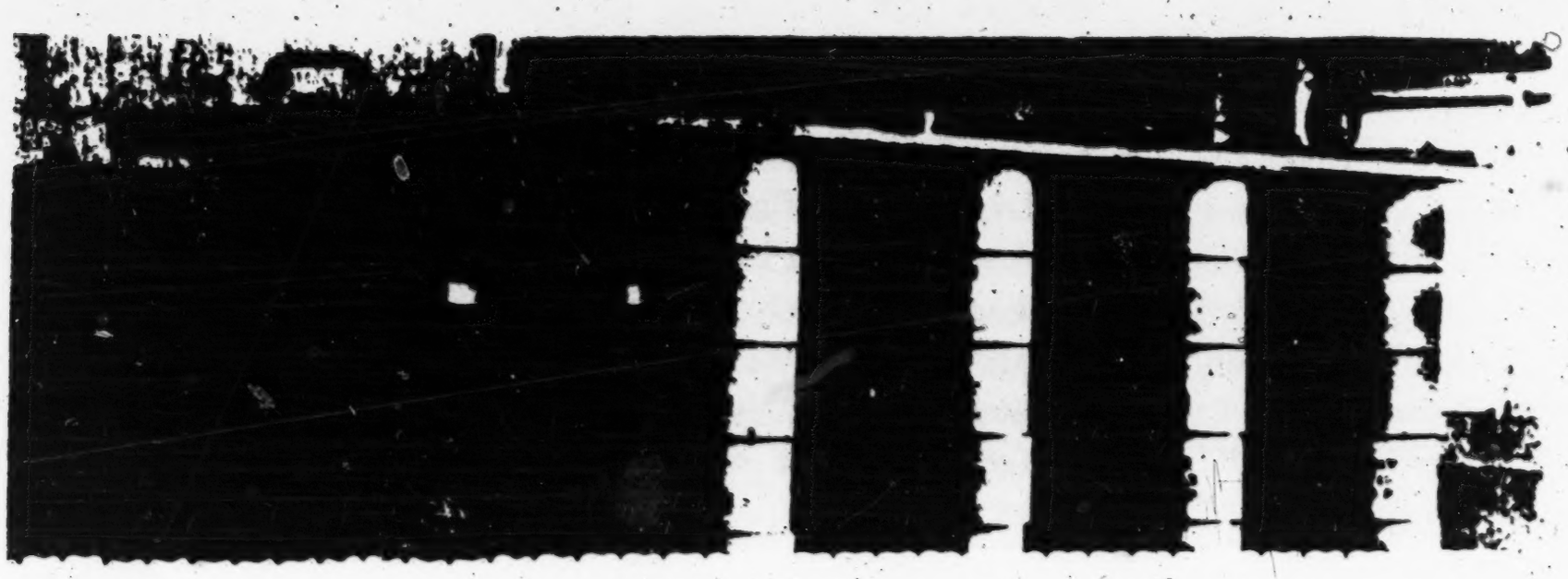
The aluminum people claim that the new material represents so many savings in manufacturing costs, factory space, labor, handling and bookkeeping that when all these factors are considered, the finished packages on a mass-production basis will actually cost less than the standard package.

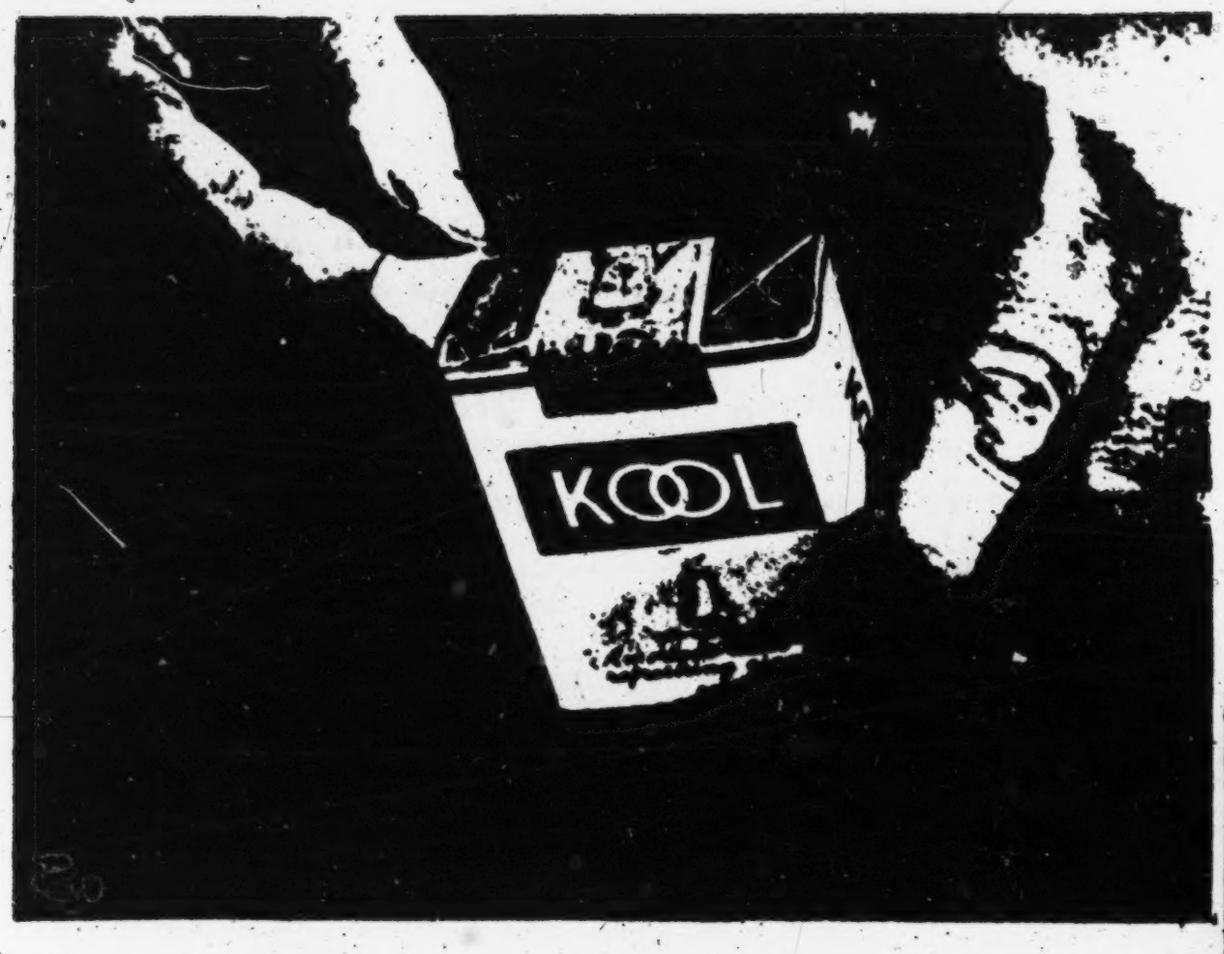
In the first place, the new wrap completely eliminates the need of all equipment and a substantial amount of floor space required for the cellophane-wrapping operation. It simplifies purchasing and inventory, since only one material is required instead of four. It simplifies handling and storage, since the wrap consists of one continuous sheet supplied in rolls. Many attendant operations, such as constant filling and cleaning of glue pots, are entirely eliminated. Complete accessibility of all parts of the machine, through its simplification, also makes maintenance and servicing less costly, it is said.

Palletized shipment

In the supplier's plants, the material is currently being printed and thermoplastic coated on a continuous sheet six or more packages wide at the rate of 3,000 package blanks per minute. The company is aiming eventually at a production of 6,000 blanks per minute per press. The sheets are slit and the blanks supplied to the user in 12-in. rolls—one package in width.

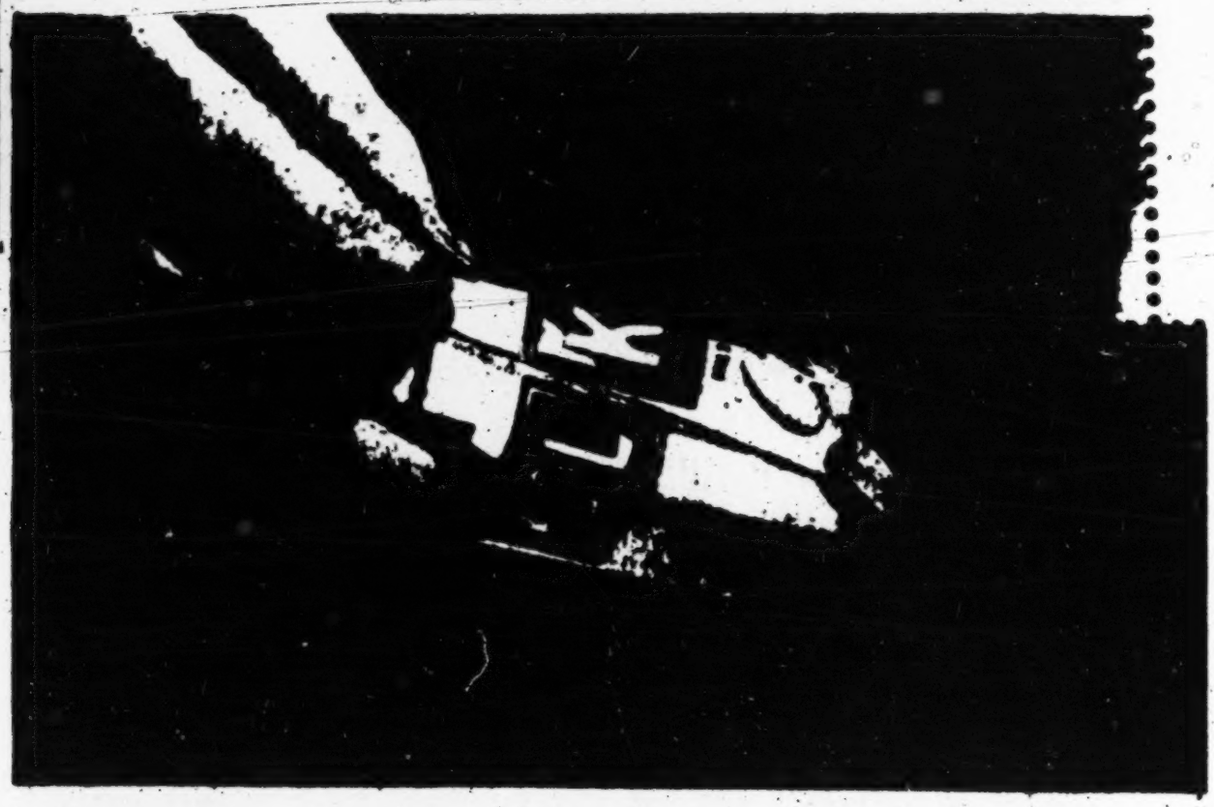
In shipping, aluminum pallets are employed to carry up to 111 rolls each. Finished rolls are placed





TO OPEN package, simply tear it in the conventional manner, as illustrated by this Kool package, also made of the new material and introduced in test areas since last October.

DEAD-FOLDING characteristic of aluminum permits package to be pinched around remaining cigarettes, thus keeping them firm and reducing sifting of tobacco in pocket or purse.



over 12 aluminum tubes on the pallet, each tube holding 12 rolls—three one way and four the other. The pallet is covered with a protective hood and strapped. It can be moved directly from truck or freight car into plant or warehouse and wheeled to the floor where it is to be used. Empty pallets may be knocked down and returned to the supplier.

Merchandising features

The new package provides the cigarette industry with new selling arguments for freshness, flavor and firmness of the pack, as well as obvious new eye appeal. Brown & Williamson are telling this story in an intensive eight-week advertising campaign in the Detroit test area—numerous spot radio announcements daily over Detroit's WJBK, WWJ and WXYZ; full-page introductory ads in the *Detroit News* and *Times*, followed by 1,000-line ads once per week in each of these newspapers for a period of eight weeks, plus cut-ins beamed to Detroit on all Raleigh network shows during this period. More than 5,000 sample Alumidor packs will be sent as gifts to prominent Detroit

they are opened. Because of the ductility of aluminum, the opening may be pinched shut and the package bent around the remaining cigarettes in the pack, thus keeping them in good shape and reducing the sifting of loose tobacco in the pocket or purse. The package tears open easily in the conventional manner.

Brown & Williamson's initial sponsoring of the new package was undoubtedly inspired by the company's package-conscious president, T. V. Hartnett, whose words on the subject are framed and hang on the walls of several executive offices as a daily reminder: "A

pack, thought it provided a fresher cigarette, that it protected the cigarettes against crushing, was easy to open and looked well. Further inquiries were made of known Kool smokers in Richmond. Everywhere reaction was laudable.

Following this preliminary test, a market test of the aluminum Kool package was opened in Milwaukee in October. Low relative humidity during the winter months is always troublesome to cigarette manufacturers, as it tends to make cigarettes dry out faster and thereby lose flavor and freshness with the escape of moisture. To date, the company has shipped out something like 50,000,000 cigarettes in the new aluminum packages and wherever they have been received, the reaction to the new package has been favorable. Remarkably good reports have also been received from test Kool packages shipped to the Panama Canal Zone, where relative humidity is high and cigarettes are apt to pick up too much moisture. The company has received many letters from this region commenting on freshness and requesting more of the aluminum packs.

The new Kool package thus provided the initial proving ground, but not the final answer since, as a mentholated cigarette, it was not competing directly with standard brands. In Detroit, the Alumidor pack for Raleighs will be competing with all other popular brands in the standard cellophane-wrapped pack. The company is withdrawing all inventory of standard packs of Raleighs in Detroit and will sell only the aluminum package.

The moisture question

In the tobacco industry, it is an accepted fact that tobacco smokes best when it contains about 12 to 13% moisture. There may be slight differences of opinion as to the exact percentages, but not as to principle. As tobacco loses moisture, it loses some of its aromatic flavors and burns faster. Without package protection, moisture content usually goes down to 9 or 10%, depending upon the variety of tobacco. Usually tobacco does not lose more than that, even in open air, but 9 or 10% moisture does not give a fresh smoke. Much of the research and many millions of dollars spent on cigarette packaging, then, are to prevent this migration of 3 or 4% moisture from the cigarettes. And the efficiency of a cigarette package can be measured by the rate of water-vapor protection it affords.

According to Brown & Williamson chemists, in accelerated tests using a desiccant, Alumidor packages weighed periodically over a 14-day period at 2% relative humidity and 70 deg. F. showed water-vapor loss of 0.7% at the end of 14 days, whereas the conventional packages lost 1.6%. Substantially the same results were obtained in the supplier's laboratories. Further tests are being made by independent sources.

However, the cigarette company feels that the real proof of a fresh cigarette is in the smoking quality, which can only be measured by whether or not it tastes good. They, therefore, employ professional smokers who test smoking qualities similarly to the way wine testers taste wines. These testers have pronounced Kools fresh and with excellent menthol retention even after seven months in the package.

The package is said to be odorless, tasteless and nontoxic, according to the supplier. It is also said that the package resists mold growth, a factor that is important for cigarettes shipped to humid climates.

Eye appeal

The new Raleigh 903 Alumidor packages are revolutionary not only in form, but in appearance. On display, they present an array of gleaming metal with the medallion portrait of Sir Walter Raleigh in full-color printing on the aluminum, giving the familiar identity. Full advantage has been taken of the aluminum surface for the design areas formerly left white on the old paper label. Tiny white, horizontal stripes printed on the clear surface of the aluminum distinguish cork-tipped Raleighs from plain ends.

Cartons for the introduction of the new packages are also aluminum-foil laminated, as are special point-of-purchase pieces to call attention to the new aluminum package. All of this brilliance of metal surfaces brings new excitement to the tobacco counter, it is felt.

Even the Kool package, where the same white background design used on the paper label is reproduced on the aluminum, is greatly enhanced by the use of the aluminum highlights. The portions of the design where the aluminum shows through give a new sparkle that cannot be matched with metallic inks on paper.

Cigarettes are shipped 50 cartons (10,000 cigarettes) to the corrugated shipping case. In the new aluminum Kool package, this quantity weighs 2 lbs. and 3 oz. less than the shipping case of 50 cartons in the conventional pack, according to the supplier of the wrap. This means a considerable saving in shipping costs.

Others expected to adopt it

The maker of the wrap predicts that other leading brands will be in the aluminum package in the near future. The conversion of packaging machines for other companies including several leading brands is now in progress.

Although this is the first material to reach the announcement stage, the trade is full of rumors about similar efforts by makers and converters of foils and films to perfect a laminated single-sheet wrap. The trend seems inevitable.

Brown & Williamson's step, therefore, in adopting the new package is one of the most significant indications that the cigarette industry is due for a package change—the first basic change in some 40 years in a package that, for sheer numbers, is probably not equalled anywhere in the packaging field. In the last year, the cigarette industry used some 18 billion packages. That's why all eyes are on Detroit.

CREDIT: *Ply-Seal package development and manufacture, and machine conversion, Reynolds Metals Co., Richmond, Va.*

M 5249

Defendant's Exhibit No. 208

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Brown & Williamson Tob. Corp.	H.C.Eastmond - R.J.Crowley	5-11-48

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
1600 W. Hill St.	6-25-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Louisville, Ky.	1-12	Cig. & Tob. prod.

B.M. Hay
Dir. of Cig.
Seller
Steele

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	200 M	Syl.	Syl.	MT	25 M	20 M		
Milp.	3 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
T. V. Hartnett	Pres.		M	
R. D. Linthicum	Dir.Mfg.		M	
W. R. Hendricks	P.A.	x	M,S	
H. B. Pritchett	Asst. P.A.		S	

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

1. a. Check market tests Life cig. (80 mm) and foil package.

2. They have extended the test markets on Life cig. to include Minneapolis, Minn., in addition to metropolitan New York area. They are continuing to use MST-58 film on this pkg. One machine in operation on this brand.

Tests on foil cig. pkg. continue. Three machines are converted to pkging foil - no orders placed for any additional machines.

3. Hendricks showed no more resistance to Aug. 1st price than might normally b e expected. Advised of 47¢ per lb. price on 300 MST-58.

Their export business is down due to low dollar balance in the countries they normally serve.

[illegible] (C. Rhone)

M 5111

JUL 6 - 1948

THIS IS ALL THERE IS TO IT. This single sheet is the complete package for one pack of Raleighs, heat sealed by specially patterned thermoplastic-coated strip which does not show on sample.

compound in a pattern conforming to the closure seams of the finished package.

The new packaging material, registered by its manufacturer under the name of Ply-Seal Pak, and the conversion of machinery to handle it are the culmination of intensive development work by Reynolds Metals Co.

Hundreds of different types of composite sheet formulations were tried and countless formulations of plastic coatings and heat-sealing compounds were tested before the currently adopted efficient combination was attained.

The machine problem

Briefly, the standard cigarette-packaging machine* operates in this manner: It works by a complex system of cam action and engaging wheels or turrets. Cigarettes are fed from trays to a hopper at one end of the machine. A counting device separates them into 20's, while another mechanism takes each form containing 20 cigarettes to a point where these forms meet the inner wrap of paper and foil, previously cut and formed around an arbor. One of the turrets transfers the cigarettes into the wrap. Another folds end flaps, after which the packages move to that part of the machine which forms, applies and glues the paper cup or wrapper. The revenue stamp is applied just before the completed package leaves the machine. Then the package goes to the cellophane-wrapping machine, which is a separate mechanical operation—not part of the standard cigarette-wrapping machine operation.

The conversion began with the removal of many parts, greatly simplifying the operation of the standard machine. First of these was the elimination of the complete mechanism for applying the paper label or cup, then placing heat-sealing units in each of the 12 stations of an existing forming turret for side-sealing the new aluminum body. New electronic controls were installed for registration and cutting the new aluminum blanks which are fed from a modification of the feed device formerly used for the paper-foil inner wrap. A simple solution of the problem of converting the feeding device to prevent the new material from buckling and wrinkling in the machine was accomplished.

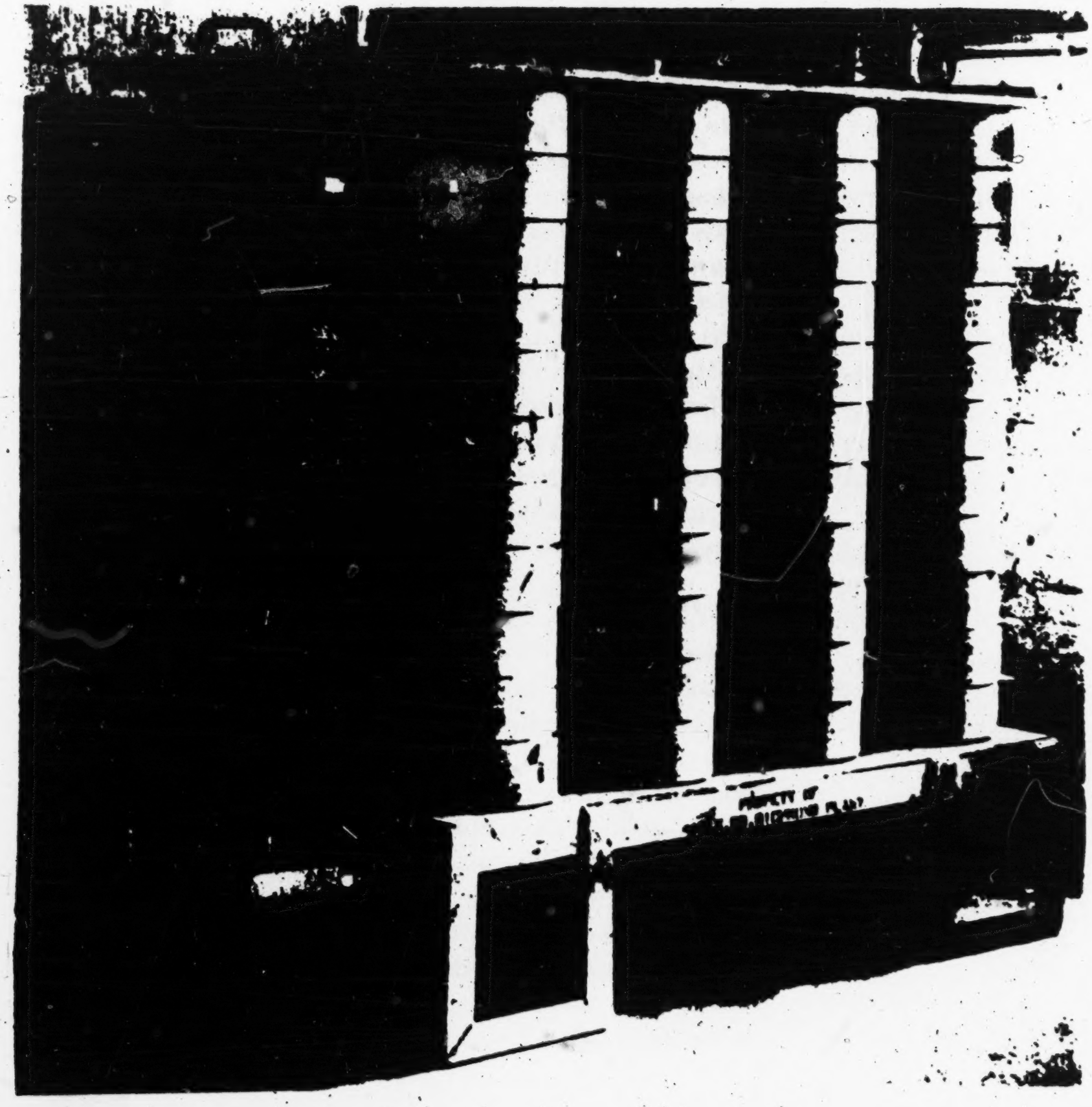
Perhaps the most outstanding features of the converted machine are the continuous steel bands or "tractor sealers" for effecting the strong, tight end seals at the ejection end of the machine. This unique use of steel belts permits just the proper amount of pressure, time and vibratory action for tamping the seals, as well as the cigarette ends, and cooling of the package end closures before they leave the machine, according to the engineers. This accomplishment is even more remarkable in view of the difficult problem of heat sealing through the many end folds of the laminated aluminum material.

When the packages emerge from the machine, they are complete. There is no additional overwrapping.

Machine capacity is given as 125 packages per

* American Machine & Foundry Co., New York.

M 5249



ALUMINUM PALLETS, carrying up to 144 rolls are used for shipping new material. Rolls are placed over 12 aluminum tubes, each tube holding 12 rolls—three one way, four the other. Pallets are covered with protective hood. They can be moved directly from truck or freight car to plant and wheeled to floor where used. Empty pallets may be knocked down and returned to supplier.

M 5249

Brown & Williamson are testing this story in an intensive eight-week advertising campaign in the Detroit test area—numerous spot radio announcements daily over Detroit's WJBK, WWJ and WXYZ; full-page introductory ads in the *Detroit News* and *Times*, followed by 1,000-line ads once per week in each of these newspapers for a period of eight weeks, plus cut-ins beamed to Detroit on all Raleigh network shows during this period. More than 5,000 sample Alumidor packs will be sent as gifts to prominent Detroiters.

Some of these arguments are revealed in quotes from the introductory ad, which claims that the package gives twice the freshness and flavor:

"You may not know it, but it's true. Ordinary cigarette packs rob you of smoking pleasure! Rob you of flavor! Rob you of freshness!

"Here's why: The inside of your present pack is lined with paper. And this paper soaks up aroma, steals flavor If you don't believe it, smell the inside of an empty, ordinary pack—and see!

"What's more, with ordinary cellophane and 'tinfoil' packs, freshness seeps out far too quickly. Thus, your cigarettes get dry too fast . . smoke 'hotter,' harsher.

"That's why the exciting new Raleigh Alumidor pack is revolutionary! It's a pocket humidor of flexible aluminum. Electronically sealed! Aluminum inside, aluminum outside *double aluminum*—bringing you *double* the flavor and extra freshness."

It is further claimed that the new package is a firmer pack and holds the cigarettes more securely even after around the remaining cigarettes in the pack, thus keeping them in good shape and reducing the sifting of loose tobacco in the pocket or purse. The package tears open easily in the conventional manner.

Brown & Williamson's initial sponsoring of the new package was undoubtedly inspired by the company's package-conscious president, T. V. Hartnett, whose words on the subject are framed and hang on the walls of several executive offices as a daily reminder: "A perfect packet of cigarettes is the cumulative result of little perfections. Until it is reached, we have failed to attain our goal."

The "little perfections" in this case were tested over a long period by quietly trying out the new package on one of the company's other brands, Kools, leader in the mentholated-cigarette field, and accounting for 85 to 90% of all sales of this type of cigarette.

Pre-tests on Kools

Early last fall, Brown & Williamson put test samples of Kools in the Alumidor pack in selected high-traffic-count stores in Richmond, Va. The new packages were placed beside the regular packages. When a kool smoker came into the store, the dealer asked him if he wouldn't like to try one of the new packs. Postcards asking smokers to write down their comments on the new packs were placed on the counters. Customers were offered two packs of Kools if they filled out the card and mailed it in. The company estimates that about 25% of the cards were sent back. According to these returns, 90% said they liked the new

M 5249

No. 209

CHEMISTRY

CLB - OK these may help tie the total story together.

~~D. E. Drew:~~

2452 Memoirs

M5075 Here's a case where MST overwraps not good enough. Shall I collect these ref's. for possible tests?

Blair

434

4581

CELLOPHANE TRADE REPORT - DIRECTOR OF SALES COPY

FIRST CALL ☐

CUSTOMER: S. FRIEDER & SONS COMPANY OF PENNA.

S/ [illegible]: K. M. SCHEU

DATE LAST REPORT: 1/19/48

ST. AND NO.: Mill & Gardner Sts.

DATE: 5/4/49

CONTROLLED BY:

PURCHASING AUTHORITY:

CITY-ZONE-STATE: Wilkes Barre, Penna.

CLASS: 1-12

INDUSTRY: Cigars

XLB

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR	4TH QTR. PUR.
DU PONT	7M	Sylvania	Direct	MT	6M	5M		
		Goodyear		Pliofilm	3M	5M		

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
L. Lichtig	Mgr.	X	MS	X

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Cigars	50M	MST - MSC	R	50M
Cigar Box Overwrap	18M	Pliofilm	R	20M
TOTAL				

R-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. Box overwrap - Cellophane protection chart.

2. Using Pliofilm as their tests showed Cellophane didn't keep cigars under normal conditions for more than 2 months.

3. They stated their cigars to start with had 13.5% moisture at room conditions.

Results --

	At End of 4 Months	3 Months	2½ Months
Pliofilm	12.5%		
Cellophane	No moisutre.	10.1%	12.0%

Their moisture test doesn't go below 8%.

We suggested we bring in some sheets and make a test with them. This very agreeable to Lichtig. Will make tests with MST-56 sheets.

5. (a) Please have copy of V. C. Clark's letter 2/25 made for Mr. Lichtig, include only table and last 2 paragraphs. Please send to me.

2 11 51 M 5075

4582

435

Defendant's Exhibit No. 209

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Christian Peper Tobacco Co.	E. E. Morgan	1/12/49

ST. AND NO.	DATE	CONTROLLED BY / PURCHASING AUTHORITY
717 N. 1st St.	2/16/49	

CITY-ZONE-STATE	CLASS	INDUSTRY
St. Louis 2, Mo.	1-12	Tobacco

~~Wendle~~

DU PONT CELLOPHANE SUPPLIER	USE THIS QTR.	COMPETITIVE MATERIALS MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	6M	Goodyear	Direct	Pliofilm	.5M			
Menasha	1M							

RETURN TO CELLOPHANE TRADE ANALYSIS

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
E. Peper	Pres.	X	M	
J. C. Cambria	G.M.	X	S	
N. Ford	P.A.	X		

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	* R S C	ANNUAL POTENTIAL
Smoke & Cig. tobacco	6M	Pliofilm 300 MST-58	R	10M
Plug Chewing	2M	300 MST-58	R	5M
Twist	2M	300 MST-58	R	5M
Cigarettes	24M	300 MST-58	R	36M
TOTAL	34M			56M

* R-ROLLS S-SHEETS C-CONVERTED

1. a. Competition status
   b. Cigarette export outlook.

2. a. (3) below.
   b. Bulk of export acc . to Philippines who have high import tax - sales down. Expect tax to be lowered by legislation early this March - sales should more than double - estimates will require 3 to 4M cellophane per mo. this item.

3. Competition - Pliofilm package appearance performance better than cellophane - no shrinkage and distortion of soft pac. Cost higher but feels well offset.

5A. Route sheet.

OM 5083

Defendant's Exhibit No. 210

Defendant's Exhibit No. 211

Cellophane Pkg 41

DUPONT

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman S.D.SMITH Date 8/17/39 No. 23

Firm INTERNATIONAL HKDF CO Bus. HDKFS Class 1-12

St. & No. 17 East 37th Street, City NYC State N.Y.

Controlled by:

Final Decision by (Titles) Mr. C.I.Kahn, Pres. Contacted on this call? No

Buyer Miss D.Klotz, P.A. Contacted on this call? No

Others Contacted this call (Titles) Mr. Catlin- Chge. Sales Packerchief.

Changes in Mailing List?

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Herz	750 C	Envelopes.
Nashua	350	Sheets.

Items wrapped in transparent sheeting: "Colorpackerchief" 10¢ and 15¢ and 25¢ "Sealpackerchief" 6 for 49¢ and $1.00 "International" 2, for 25¢ 1 for 25¢ silk hdkf.mens 50¢.

Other products on which Cellophane could be used: (Note new products in work) Handkerchiefs.

a. Specify sales tools used—below:	d. Agreement account? No
b. Latest success story—below:	e. Did you secure order? No
c. Service and general remarks—below:	

a-Trade Paper Advertisement-
Own Store Survey
Package Development Sealpackerchief overwrapped.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies to
7/13/39	8/18/39	8/18/39-K.	

CREATIVE WORK DONE

1. New items on market since last call or order [illegible]—distribution, potential.

3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?

11/30	p	C. I. Kahn, President. Would not
1939		discuss Sealerpack line with writer.
		Catlin in charge of this, mostly at
		plant. Called on phone for appointment.
		Will be necessary to call writer later
		as will be out of town for indefinite
		period of time.

2. Date wanted?
3. Re[illegible] Price?
4. When will samples be sent?
5. Description of development desired; type of wrap, label, containers, etc.
6. Type of Cellophane?
7. Machine wrapped?
8. Return direct to account? If to you, where?

MACHINE DEVELOPMENT REQUEST

1. Product?
2. Samples? (If no samples give sketch and complete overall dimensions of each size.)
3. "Cellophane"? Weight, color, type
4. Daily production each size?
5. Yearly production each size?
6. Is production seasonal?
7. Average retail price each size?
8. Are wrapping machines now used?
9. Name of manufacturers?
10. Machine model and number?
11. If new machines required, shall machine manufacturers salesmen call?

[458 438]

Defendant's Exhibit No. 212

R-12315*

JU PONT

Cellophane
TRADE MARK

TRADE REPORT
(Trade Analysis Copy)

SALES COP.	☐
PROM. SECT.	☐
SALES SERV.	☐
ADV. SECT.	☐
CONV. SECT.	☐
PROD. DEV.	☐
SERVICE SECT.	☐
PLANNING	☐

fe 7 G. Porter

Salesman: ~~M.R. Webb F.A. Wight~~ — Date: 3/27/41 — Type Call: C

Firm: MARSHALL FIELD & CO. — Date last Call: ~~11/29/40~~ 26 — Type Call: P — Date last Prod. Call: — Class: 1-6

St. & No.: — Bus.: Textiles

City & State: Spray, N.C. — Controlled by: Above N.Y.C.

Final Decision by (Titles): N.Y.C. — Contacted this call?

Buyer: J. M. Geer — Contacted this call? yes

Others Contacted this call (Titles):

RETURN TO "CELLOPHANE" TRADE ANALYSIS

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using [illegible] material, state type and reasons
du Pont	1000	
Goodyear	350	at Fieldale plant (Towels)
Sylv.	500	" " " (Hosiery)
Shellmar	350	

Items in transp. sheeting: (specify which is competitive or converted film)

Spec. label sheets | dish towels, bedspreads, hosiery

Other potential products:

1) Eliminate competition

~~2) Sheets, cases, blankets and bedspreads.~~

a. Sales aids used—specify below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Mailing list changes—below:

e. Agreement expires? none

f. Did you secure order? samples.

Direct competitive selling on use of rubber sheeting at Fieldale plant to eliminate that first. This as a result of call at Fieldale earlier today.

Emphasized all advantages of "Cellophane" (over rubber) stressing in particular clarity, lower price, etc. Mr. Geer repeated what Mr. Ripple had told us at mill.

CREATIVE ACTIVITY

Defendant's Exhibit No. 213

1-0

Cellophane TRADE MARK TRADE REPORT

(Trade Analysis Copy)

SAL. & COV.	
PROD. SECT.	
SALES SERV.	
ADV. SECT.	
CONV. SECT.	
PROD. DEV.	
SERVICE SECT.	
PLANNING	

ES

Salesman: W. J. Minker & E. A. Wight — Date: 6/25/41 — Type Call: P

Firm: Pacific Mills, Inc. — Date last Call: 6/6/41 — Type Call: P — Date last Prod. Call: 6/6/41 — Class: 1-12

St. & No. — Bus.: Textiles

City & State: Lyman, S. C. — Controlled by: Pacific Mills, Boston, Mass.

Final Decision by (Titles) — Contacted this call?

Buyer: C. C. Ewen — Contacted this call?

Others Contacted this call (Titles): W. S. Nunnally

RETURN TO "CELLOPHANE" TRADE ANALYSIS

WC CE

Sources of Supply	Est. Cons. lbs. this Calendar Quarter	If using competitive material, state type and reasons
duPont	8,000	
Shellmar	1,000	Thru Sears

Items in transp. sheeting: (specify which in competitive or converted film)

Sheets and cases - bolt goods

Other po... ntial products:

Sheets and cases

a. Sales aids used – specify below:

b. Latest success story – below:

c. Service and general remarks – below:

d. Mailing list changes – below:

e. Agreement expires? 12/14/41

f. Did you secure order? no

CREATIVE ACTIVITY

9/[illegible]41 S. J. M. Geer, P.A. Followed last week's call to get answer on roll size reduction. Found Geer more interested in overcoming breakage of 450 PT on sheets & cases than on size reduction. We spoke of advantages of 450 MST again & offered our help in wrapping samples of sheets & cases for test. Geer interested but asked us to defer such tests for 30 or 60 days due to more urgent matters. He stated part of breakage fault was their own -- due to fact they wrap in "Cellophane" for inventory & it might be six months, etc. before sheets & cases in "Cellophane" leave their own plant. Follow.

10/23/41 S. J.F. Wilson, Gen. Mgr. & J.M. Geer, P.A. Complete explanation new policy to win their support of it. Allocation figure of 172# monthly - modified film & terms change all accepted by them. R-Thought cost reduction commendable. Will advise their Pleidale, Va. towel & hosiery divisions of this new policy. Generally speaking did not feel that full curtailment would affect them seriously because they knew our policy would be universal in effect. Will mail us order soon for next period. Also will look to other packaging materials for future.

11/12/41 S. J.M. Geer, P.A. Call back to see whether new policy operating satisfactorily here. Reviewed allocation, modified film & terms change. Urged again investigation of substitute packaging materials. R-Geer advised they were prepared for full curtailment by dropping "Cellophane" when necessary. Received 600# order from us Oct. 1st. which will hold them to Jan. 1st. Has exhausted allocation.

M 5360

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
7/13/39	8/18/39	8/18/39	W.

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (see back of report)

1.2.None

3.Sealpackerchief- 300PT "Cellophane" overwrapped- related result of own haberdashery survey- Sealpackerchief now in small display case back of counter- Demand item only- after wrapping in "Cellophane" sales were up 50% difference of behind counter and on counter- figured approx.costs and urged store test.

R.Claims not add to present pkging costs-have considered from all angles in recent years and they believe present carton has been entrenched in mind of consumers-pointed out however not in tox many consumers minds- (knew that sales on this have been slipping)-Will not consider at present.

4. Continue to hammer away and strive for store test.

5. None.

9/26/39	P. C. I. Kahn out of town. Mr. Catlin difficult to corner. Works out of Bronx factory. Pressed for store test of Sealerpackerchief Line in #300 MST film. (R) Would not commit himself.
10/30 1939	P. C. J. Kahn, President. Just back in New York from extensive road trip. Presented price reduction letter and figured what this meant on new cost basis to account for sealer-back overwrap. Suggested again trial distribution on this in restricted area. Little interest, but stated price reduction step in right direction.

437

sheeting at Fieldale plant to eliminate that first. This as a result of call at Fieldale earlier today.

Emphasized all advantages of "Cellophane" (over rubber) stressing in particular clarity, lower price, etc. Mr. Geer repeated what Mr. Ripple had told us at mill.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

We played up #450 MST as ideal stock to overcome breakage on dish towels. Advised we would supply samples if they would test.

They accepted and will give us sizes in a few days.

We are to present samples and show how to wrap. They will test and give us results.

~~7/22/41~~	NI	~~All~~ executives out or tied up.
8/27/41	S	-- J.M.Geer, r.A. and T.M.Jenkins. Policy call to build up ourselves and to show advantages to them of reduction of sheet and ~~roll sizes. Looked over line and saw several~~ chances to reduce. Measured their sheets and cases and showed cost savings on annual basis. (p.) Geer ~~apparently approved and will check~~ figures and take up with Supt. We are t call again soon at his request to come to final ~~decision. Final annual poundage savings will be~~ known at that time. All morning spent here.

M 5360

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made, including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

1. Chatbau brand sheets and cases.
   Boston jobber - N.E. Dist 1,000#.

2. See above.

3. Went into plant discussed use boxes and increasing costs. Surprised to learn from Nunnally that most all A.M.C. accounts specifying long fold sheets in boxes - formerly all in "Cellophane".

   Nunally claims he doesn't know why this change was made by A.M.C., so by a copy this report, suggest New York office try to find out what has happened.

   Plant prefers "Cellophane". I do not believe customers are charged for boxes but are charged for "Cellophane" put up.

4. Try to get Hayes to absorb cost of "Cellophane" at mill.

5. N.Y.O. see 3.

Wil. Mfg.—

8/22/41 S. -- Discussed use Miller Sheeter and Gluer to reduce costs...Nunnally will see Miller in operation at Beacon. Claims use boxes growing and service and printing on them bad. Here they prefer all "Cellophane" -- but N.Y.O. wants boxes. Prod. slowed down due to no sheeting.

M 5361

9/11/41 S -- Mr. Hayes. Alarmed at increase in their use of boxes. Reason our sales for this quarter off 2000 lbs. 450 PT. Asked us to help in their N.Y.O. to stop increase in use boxes as costs are higher and boxes harder to handle than "Cellophane." Practically all sheets and cases formerly in "Cellophane" are now in cartons.

9/19/41 S -- C.B.Hayes, V.P. Mr. Ewen, Mr. Nunnally. Explained our position on "Cellophane." The will be glad to cooperate and think our policy is correct.

10/22/41 S. Mr. Chapin, Asst. G.M. Mr. Nunnally, Mr. Ewen. Explained situation at Tucapau and that I had to Pacific Mills their allocation is approx. 1700#. Chapin & Nunnally both stated that 1700# would not be enough "Cellophane" for their own requirements for Nov. or Dec. They will check with Startex & based on their allocation will tell them how much of Pacific Allocation they

10/22/41 Contd.-Can have.

11/3/41 S. Mr. Chapin, Gen. Supt. Mr. Ewen, Mr. Cobb Startex. Our position with these accounts discussed in detail. Allocation 1700# monthly. Cobb was told he could have 700# for Nov. & Dec. total - based on last years sales last quarter 1700# monthly will not take care of them, however, I told Chapin this was the best we could do. Chapin is writing his NYO for a picture of what they expect for Nov. & Dec. We suggested Cobb go back to rubber

11/3/41 Contd.--former source of supply. May do.

DU PONT

☐ FIRST CALL

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

CUSTOMER	SALESMAN	DATE LAST REPORT
Contour Hosiery Mills	J. Couturier	8-19-47

ST. AND NO.	DATE	CONTROLLED BY PURCHASING AUTHORITY
1616 S. Main St.	1-26-48	

CITY-ZONE-STATE	CLASS	INDUSTRY
Rockford, Ill.	2-6	Hosiery

Sale by Sales

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THRU	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	-	-			0			

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
A. J. Doyle	Sec. Treas., G.M	x	M,S	
C. A. Collins	Prod. Mgr.			

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCTS USING CELLOPHANE WRAPPING

PRODUCT	PRESENT CELLOPHANE PENETRATION	CELLOPHANE FILM (CODE)	R—ROLLS S—SHEETS C—CONVERTED	ANNUAL POTENTIAL
Nylon hosiery	3 M	PT-62	S	8 M
TOTAL				

R-12727—REV. 3-47

1. Find reason for customer's not purchasing for last 2 months.

2. Doyle claims customers don't want cellophane and he has switched to tissue with fine acceptance by the trade.

We got him to show us his new wrap which is fundamentally the same as previously except using a larger sheet.

Pointed out extra appeal of cellophane as compared to tissue and more "class" it had as compared to non-transparent tissue.

He agreed to try this new type wrap using larger sheets of cellophane, and we are sending sample sheet for his use.

We will follow to see if his trade has any specific comments and preferences re these two put ups

6-14-48 NMR

M 5362

4590

443

Defendant's Exhibit No. 214

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: ACME HOSIERY DYE WORKS INC.

SALESMAN: D. H. CHILES

DATE LAST REPORT: 1/13/48

ST. AND NO.: 29 Lee St.

DATE: 5/27/48

CONTROLLED BY PURCHASING AUTHORITY:

CITY-ZONE-STATE: Pulaski, Virginia

CLASS: 2-6

INDUSTRY: Hosiery

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	50				0	0		

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
B. G. Cummings	Mgr.	X	MS	

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R B C	ANNUAL POTENTIAL
6-24-48 NOW				
TOTAL				

RETURN TO "CELLOPHANE" TRADE ANALYSIS

1. Check for June order.

3. Have stopped using Cellophane other than present stock on hand. When this is gone will confine all packing to tissue.

M 5363

JUN 3 - 1948

Defendant's Exhibit No. 215

DU PONT

Corrected Copy ☐
FIRST CALL

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

CUSTOMER	SALESMAN	DATE LAST REPORT
Pepperell Manufacturing Co.	W. A. Hannigan	1/24/49

ST. AND NO.	DATE	CONTROLLED BY
	2/21/49	PURCHASING AUTHORITY

CITY-ZONE-STATE	CLASS	INDUSTRY
Lewiston, Maine	1-12	Textiles

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT		None	0					
See Boston reports								

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE.
J. Gastonguay	Asst. Plt. Supt.	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
See Boston.				
TOTAL				

R-12727 A * R-ROLLS S-SHEETS C-CONVERTED

1. Obtain additional information for Pepperell packaging study.

2. Obtained.

3. Comp. Learned from Gastonguay that orders have been placed with Shellmar and Nashua for printed Pliofilm. When received, this will be used on Pepperell (regular muslin) and Lady Pepperell (luxury muslin) sheets. These two numbers are now in lithographed boxes. Whether Cellophane will continue to be used on colored sheets and percale sheets is doubtful.

It's entirely possible that the thinking is towards on Pliofilm on these too.

Note: This comp. information will be shown on next TR at Boston location.

This puts stress and urgency on packaging study dealing with elimination of Cellophane breakage as well as a lower over-all packaging cost program. This study is nearing completion.

M 5088

Defendant's Exhibit No. 216

4592

445

DUPONT

FIRST CALL ☐

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

CUSTOMER: P Pepperell Manufacturing Co.

SALESMAN: W. A. Hannigan

DATE LAST REPORT: 4/29/49

ST. AND NO.: 160 State St.

DATE: 7/12/49

CONTROLLED BY PURCHASING AUTHORITY:

CITY-ZONE-STATE: Boston, Mass.

CLASS: 1-12

INDUSTRY: Textiles

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR	MANUFACTURER	BUYS THROUGH	PT. MT. CA. ETC	1ST QTR PUR	2ND QTR PUR	3RD QTR PUR	4TH QTR. PUR.
DU PONT	1M	Goodyear	Nashua	Rubber	20M	5M	15M	
Nashua	.5M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M L CHGE
F. W. Newbury	P. A.	X		
F. L. Cheever, Jr.	Adv.Mgr.	X		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

CELLOPHANE SHEETS AND CELLOPHANE WRAPPING

PRODUCT	TYPE FILM CODE	R S C	ANNUAL POTENTIAL
TOTAL			

JUL 20 1949

R-12727-A

** R-ROLLS S-SHEETS C-CONVERTED

1. a) Follow Cheever's letter to Adv. Sec., Wilm. regarding his interest in Xmas consumer ad.

   b) Check rumor of Hayssen machine purchase for wrapping sheets and cases in Pliofilm.

2. a) Showed proof of Xmas ad. Cheever admitted he was interested in having their salesman carry ad providing sheets were shown in ad. No sheets in ad - no interest. Cellophane stock bands for Xmas have been purchased from Nashua.

   b) Plans definite to purchase Hayssen providing latter will give them definite guarantee machine will wrap with Pliofilm - (it is rumored that Goodyear will pay for "extra attachments").

3. Comp. Info. - Once again, Newbury indicated that their thinking is definitely not married to rubber film - thus far it has performed better than Cellophane.

   Showed samples of Polythene - admitted interest.

(continued)

M 5089

4593

446

Defendant's Exhibit No. 217

	based on last years sales last ~~xxx~~ quarter 1700# monthly will not take care of them, however, I told Chapin this was the best we could do. Chapin is writing his NYO for a picture of what they expect for Nov. & Dec. We suggested Cobb go back to rubber
11/3/41	Contd.--former source of supply. May do.

11/25/41	S -- Ewen, Nunnally, Chopin.
	Discussed L-20 -- on orders on hand to date they will have ~~left 280 lbs. 13 1/2" No. 300 over year~~ old (pillow cases) 111 lbs. 15 1/2" 450 PT (they will have Startex try to use up), 673 lbs. 21" 450 PT use sheet set. ~~This 21" film shipped by us 11/17. Can we accept return and on what basis.~~
	This was not discussed with customer. We figured up how many sets and pillow cases this "Cellophane" -- over and above orders -- will put up and this info. was sent to N.Y.Sales Office. I also suggested that they should try to move out of their whse. all "Cellophane" packaged goods being held and billed to customers. A good opportunity to clean up old whse. stock. Will also do this. Made date to see them 12/5.
12/2/41	S -- Mr. Chopin. Has not heard from N.Y. re disposition "Cellophane" over and above orders. Believes however they will be able to use most all on hand.
	MS361

CELLOPHANE TRADE REPORT - PAGE 2

CUSTOMER: Paperell Manufacturing Co.

SALESMAN: W. A. Hannigan

ST. AND NO.: 160 State St.

DATE: 7/12/49

CITY-ZONE-STATE: Boston, Mass.

CLASS: 1-12

Asked for yield, prices, etc. Gave them.

Inquired re printing on Polythene. Relayed recent conv. with Milprint representative that Milprint is able to print.

Asked us to follow on this and let him know. Agreed.

5. B: CC: A. F. Wendler.

M 5089

RETURN TO
"CELLOPHANE"
TRADE ANALYSIS

Defendant's Exhibit No. 218

COLOR SELLS—product color or printed color

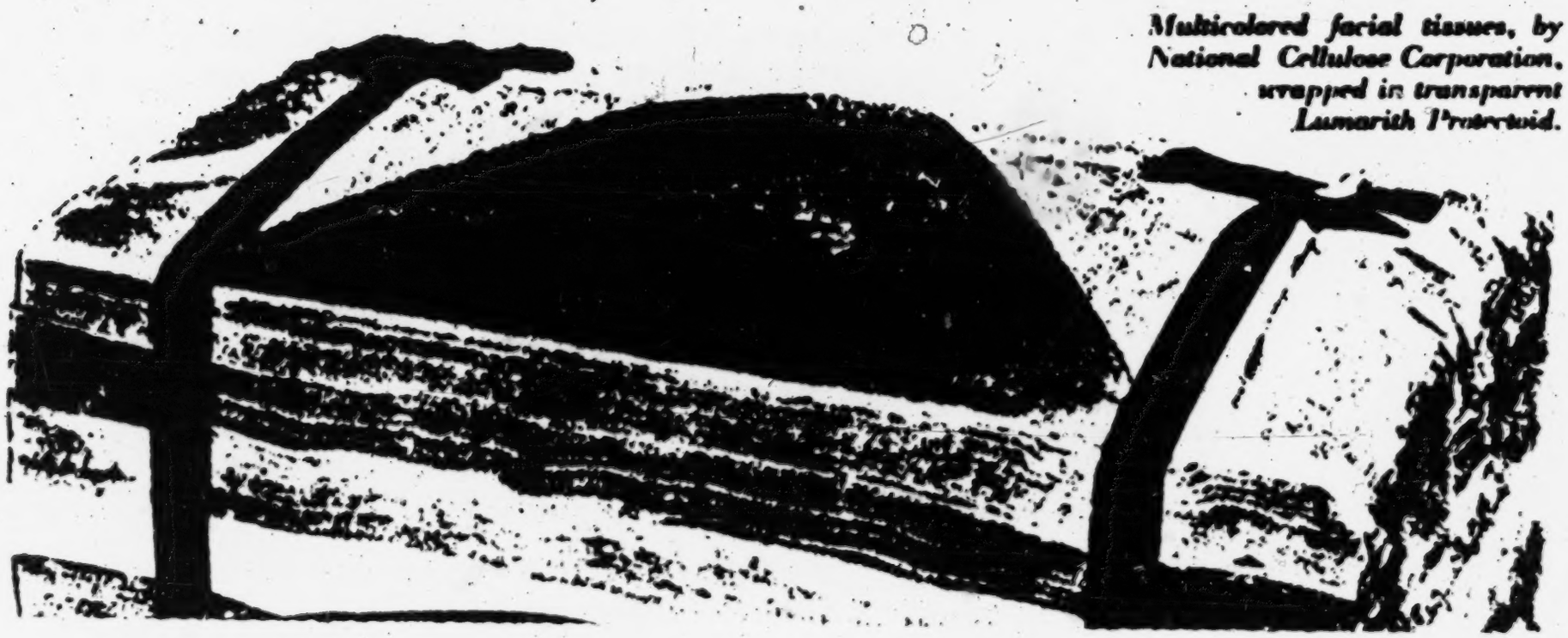
There are two techniques in packaging with wraps. Here are outstanding examples of each—both wrapped with Lumarith Protectoid! Clear or printed, rigid or flexible, Lumarith Protectoid holds its appeal indefinitely . . . never shrinks or wrinkles.

To reveal color *in the product*, clear Lumarith Protectoid is the choice of the leaders in field after field. It protects the surface . . . enhances the beauty within.

To gain added attention with color *on the wrap*, printed Lumarith Protectoid is ideal. For in addition to its smooth feel and sparkling appearance, Lumarith Protectoid has a perfect printing surface.

LUMARITH PROTECTOID

***Packaging Division*, CELLULOID CORPORATION, 180 Madison Avenue, New York City. Established 1872. Sole Producer of Celluloid and Lumarith. (Trademarks Reg. U. S. Pat. Off.)**



Multicolored facial tissues, by National Cellulose Corporation, wrapped in transparent Lumarith Protectoid.

Kraft's Chantelle Cheese—wrap of printed Lumarith Protectoid by

Defendant's Exhibit No. 219

FORM SRC-1 7200-8-31

DUPONT CELLOPHANE
REG. U.S. PAT. OFF.

TRADE REPORT

(District Office File Copy)

Salesman Cleaver Date 5-9-31 No. 207

Firm Dwyer Paper Products Co. Div. Paper Specs 2-6

St. & No. 415 W. 20th St., City Marion State Ind.

Final Decision by H. A. Dwyer Contacted on this call? Yes

Buyer Dwyer Jr. Contacted on this call? Yes

Type of Call* — Productive X Service No change Phone

Transparent Sheeting Used					Bo't From	Estimated Consumption-lbs. This Quarter	Next Quarter
300	P.T. X	Emb.		2nds			
450	P.C.	Sheets	X	Misc.	us	700	700
600	M.T.	Rolls					
H.W.	M.C.	1sts	X				

Items wrapped in Cellophane: Paper Plates, 2 sizes

a. Sales tools used on this call:		b. Agreement account?	No
Samples X	Pack. Dev. X	c. Did you secure order?	No
Photo Album X	Market Survey	If not, when?	Buys Feq.
Ad. Book X	Post Campaign X	d. Approx. date next call?	Sched.
Trav. Display		e. If service call, state nature below:	

Believe potential here warrants 2nd class. Per O/S N.Y. 4-14, attaching their letter 4-8, explained only possibl better prices beyond case lots was use of 2nds, and agreement, policy, which I outlined. Cautioned against tight wrapping, per M.C. Pollock's report of 4-81. Per C.W.R.'s letter 4-24, on quality complaint, found very badly wrinkled stock shipped on order CC 7387.

Phone, Non-Interview and No Change Calls not reported since last call. (see below)

Date of last Prod. Call.	Rec'd at Branch Office	Date Typed	Copies for
11-21-30	5-11-31	5-12-31	

*Phone, Non-Interview and No Change Calls are not to be reported unless important information is developed.

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. New suggestions made on this call.

Defendant's Exhibit No. 220

H 141

DUPONT

Cellophane TRADE MARK
TRADE REPORT
(Trade Analysis Copy)

	B	S
SALES COR.	☐	
PROM. SECT.	☐	
SALES SERV.	☐	
ADV. SECT.	☐	
CONV. SECT.	☐	
PROD. DEV.	☐	
SERVICE SECT.	☐	
PLANNING	☐	

Salesman E.S. Hall-R.E.Sidwell Date 2/11/41 Type Call P

Firm Marathan Paper Mills Date last Call 1/9/41 Type Call P Date last Prod. Call 1/9/41 Class 1-12

St. & No. Bus. Paper

City & State Menasha, Wis. Controlled by:

Final Decision by (Titles) Various Execs. Contacted this call?

Buyer John Levandusky-P.A. Contacted this call? Yes

Others Contacted this call (Titles) A.W. Stompe-S.M. Jobber Sales.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Us	2500	

Items in transp. sheeting: (specify which is competitive or converted film)

Napkins, T.T.

Other potential products:

~~Napkins, T.T.~~

a. Sales aids used—specify below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Mailing list changes—below:

e. Agreement expires?

f. Did you secure order?

C. Discussed broad picture of napkin sales on basis of reeent shift to carton replacing both wax glassine as well as Cellophane. Reviewed the successful merchandising job Cellophane had done on other items distribution through retail grocers. Fact that there exists a ve large potential to be tapped through the increased use of paper napkins in the home. In general, the interview was based on gaining detailed background information to tie-in with retail store & jobber surveys.

Stompe's response was to go into detail as to Menasha's position in the napkin field. Mills are now selling

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.

2. Result of suggestions made on previous calls.

3. Creative effort: (a) Objective this call? (b) Specific suggestions made, including evidence from your retail store surveys. (c) Action promised by customer?

4. What is your plan for next call?

5. Action needed by: (a) District Office (b) Headquarters.

4-22 41 RFS	P	John Levandusky, Asst. P.A. (Converter Sec.) No order. Retail merchandising story on paper specialties. Need for routine plus improved store position. Will include items on Sol. grocer test. Learned using competitive 2nds on specification wrap on 10¢ T.T. at Ashland Mill. Bid for order. R.Did not commit, but offered opportunity when next in need. *
6-12 41	P	M.E.Mace, P.A. Us, 2500#. No order. Development on large size napkins. Dispenser type mit to stimulate use in home. Extra profit margin. R.Large size Hostess released recently on test basis. *

Date 5-30-41 3 Mos. Decrease 11,000 Competitive Sales—This Qtr.

Remarks: Shift to cartons for napkins also dropped production on decorative line.

8-1 41	P	Us, 2500#. John Lewandusky. P.McConnell. Discussed trend to dinner sized napkins. Value of move towards stronger profit position. R. Unit out on test basis. Businessstill up sharply on staples.

Date 8-30-41 6 Mos. Decrease 4,000 Competitive Sales—This Qtr.

Remarks: Ceased production on all decorative items.

9-17 41 AGC	S	Us, 2500#. M.E.Mace. Sales executives at Chicago paper convention. Mace brought up matter of future supply of Cellophane, which we avoided by referring all inquiries to Mr. Lake. Checked on 2nds, but sufficient on hand
10-28 41	S	M.E.Mace, P.A. Called to sound them out on direct wrappiing napkins, etc. They have discontinued Cellophane for this usage. Found E.C.Lake had been here giving complete picture present situation. Bowed out without further comment.

M 5364

[4598 451]

Defendant's Exhibit No. 221

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DU PONT

FIRST CALL ☐

CUSTOMER	SALESMAN	DATE LAST REPORT
Kimberly Clark Corp.	J. Couturier	10-26-48

ST. AND NO	DATE	CONTROLLED BY / PURCHASING AUTHORITY
	1-19-49	

CITY-ZONE-STATE	CLASS	INDUSTRY
Neenah, Wis.	1-12	Paper spec.

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	6 M		0					
Shell.	10 M							

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
L. C. Stilp	Gen.P.A.		M	
R. E. Schwartz	Purch.	x	S	
W. H. Gresenz	Prod., Stnds.		M	

PRODUCT	PRODUCTS AND CELLOPHANE WRAPPING: PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Pocket Pack Kleenex	40 M	300 MST-54	C	100 M
Sanitary belts	12 M	MST	R	15 M
Tampons	12 M	"	"	15 M
TOTAL				

R-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. Follow for release of customer findings on cellophane pkging of Pocket Pack.

2. Still no information will be given out re tests K.C. has conducted.

3. Complaint - Schwartz says as far as Kimberly Clark is concerned, cellophane is not the best packaging material they need and their tests are still continuing to find another and more acceptable material. He advised that glassine is being tested now and packages are out on the market in glassine. We asked for samples, but he advised none were available but would try to have some for us on our next call.

Stated that they definitely will not go thru another winter and all breakage problems with with cellophane.

We again emphasized C.W.Shields' study and recommendations made. Pointed out need for using 450 MST 54 during winter months. This they flatly refuse to do because as they put it, "it costs too much". However, we pointed out that if they could greatly reduce or eliminate entirely the breakage by using 450 film, then certainly the cost is not too high. It simply boils down to the fact that we have a film that will do the job but they don't want to pay for it.

M Soto

Defendant's Exhibit No. 224

FORM SSC-1 7500-1-31

DUPONT CELLOPHANE

REG. U.S. PAT. OFF.

TRADE REPORT

(District Office File Copy)

Salesman Cleaver Date 3-30-31 No. 36

Firm Haas, E. Breneman Co., Bus. Window Shades 1-6

St. & No. 2045 Reading Road City Cinci. State Ohio

Final Decision by I.W. Sharpe, G.M. K.B.Kiel, Contacted on this call? Latter

Buyer K.B. Kiel, Contacted on this call? Yes

Type of Call* — Productive X Service X No change Phone

Transparent Sheeting Used						Bo't From	Estimated Consumption-lbs. This Quarter	Estimated Consumption-lbs. Next Quarter
300	A	P.T.		Emb.	Inds			
450		P.C.		St.	Misc.			
600		M.T.	X	Rolls	X	us	350	350
H.W.		M.C.		Labs				

Items wrapped in Cellophane: Curtains (Brenlin Pique) together with fittings separately wrapped, all in 300 M.T.

a. Sales tools used on this call:

Samples		Pack. Dev.	A
Photo Album		Market Survey	
Ad. Book		Post Campaign	X
Trav. Display			

b. Agreement account? No

c. Did you secure order? Samples

If not, when? As needed

d. Approx. date next call? Sched.

e. If service call, state nature below:

This call in answer to urgent request, they have been having trouble with labels on M.M. stock, We recently sent them some 4 emoistening solution, w ich caused the labels to disintegrate when applied. Now they have been sticking gummed brown paper to the Cellophane and then pl cing the label on the paper, but this has slowed up their operations, and also the paper comess loose from the Cellophane (see below)

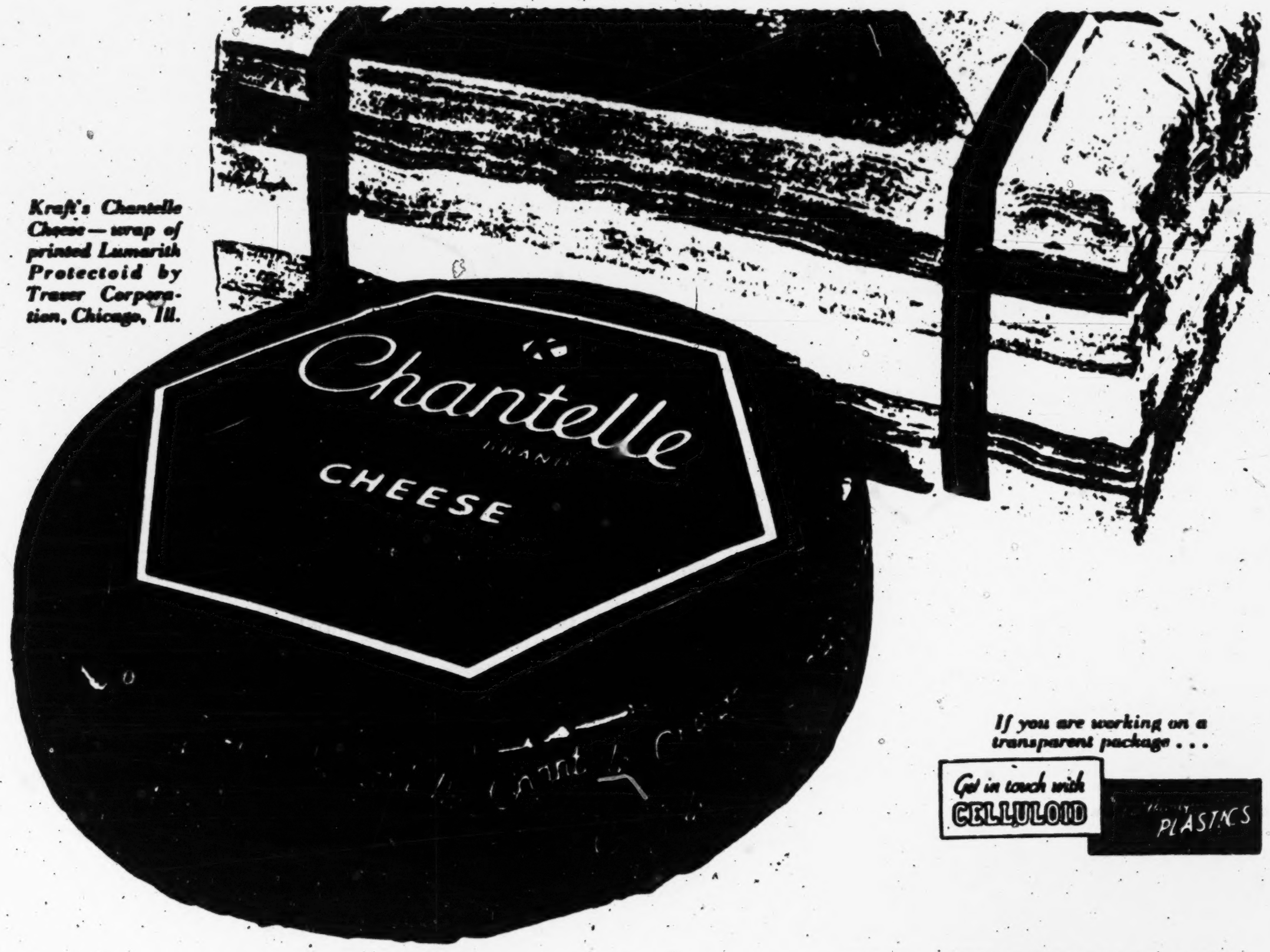
Phone, Non-Interview and No Change Calls not reported since last call.

Date of last Prod. Call.	Rec'd at Branch Office	Date Typed	Copies for
11-12-30	4-1-31,	4-1-31	

*Phone, Non-Interview and No Change Calls are not to be reported unless important information is developed.

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.



Kraft's Chantelle Cheese—wrap of printed Lumarith Protectoid by Traver Corporation, Chicago, Ill.

If you are working on a transparent package . . .

Get in touch with CELLULOID PLASTICS

M 5251
May 1941

Ad. Book X	
Trav. Display	s. If service call, state nature below:

Believe potential here warrants 2nd class. Per O/S N.Y. 4-14, attaching their letter 4-8, explained only possibl better prices beyond case lots was use of ends, and agreement, policy, which I outlined. Cautioned against tight wrapping, per M.C. Pollen's report of 4-81. Per C.W.R Is letter 4-24, on quality complaint, found very badly wrinkled stock shipped on order CC 7387 .

Phone, Non-Interview and No Change Calls not reported since last call. (see below)

Date of last Prod. Call.	Rec'd at Branch Office	Date Typed	Copies for
11-21-30	5-11-31	5-12-31	

*Phone, Non-Interview and No Change Calls are not to be reported unless important information is developed.

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. New suggestions made on this call.
7. Accomplishments on this call.
8. What is plan for next call?
9. What assistance can organization give you?

SERVICE CONT.

FOR PRODUCTIVE CALLS ANSWER EACH QUESTION NUMERICALLY BELOW

Looked like Seconds, approx. 18,000 sheets 300 P.T. 14 X 14, and 11 X 11. Sending 2 pkges. to Mr. Bowen, for investigation. Storage and handling apparently okey. Aside from this wrinkled stock, they have accumulated a quantity of off size and irregularly cut and torn sheet

1- H.A. Dwyer, Pres. Dwyer, Jr. Mgr. and P.A.

2- Paper Plates, Napkins.

3- None
4- "
5- No action except extension of Plate line.

6- Extension of use of 300 P.T. to cheaper syndicate lines, now wrapping in Glassine, combination Plate and Napkin units, overwrapped in 300 P.T.

7- They want to use Cellophane 100 % but cost too prohibitive, for the cheaper lines, due to price they have to give syndicates. Will consider combination sets, think idea a good one.

8- Follow expansion and check. Present newest samples and combination sets.

9- Please make up agreement forms for presentation here. Believe potential warrants.

M5008

(449) 44

a. Sales aids used—specify below:	d. Mailing list changes—below:
b. Latest success story—below:	e. Agreement expires?
c. Service and general remarks—below:	f. Did you secure order?

C. Discussed broad picture of napkin sales on basis of reeent shift to carton replacing both wax glassine as well as Cellophane. Reviewed the successful merchandising job Cellophane had done on other items distribution through retail grocers. Fact that there exists a ve large potential to be tapped through the increased use of paper napkins in the home. In general, the interview was based on gaining detailed background information to tie-in with retail store & jobber surveys.

Stompe's response was to go into detail as to Menasha's position in the napkin field. Mills are now selling

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.
2. Result of suggestions made on previous calls.
3. Creative effort: (a) Objective this call? (b) Specific suggestions made, including evidence from your retail store surveys. (c) Action promised by customer?
4. What is your plan for next call?
5. Action needed by: (a) District Office (b) Headquarters.

packaged napkins. (basis 13½x13½,unprinted,80 count) for resale at $4.20 to $4.35 per hundred packs. The managemen has taken the position that unless a mill is streamlined to handle high volume, this price actually represents an operating loss. For this reason they have decided to abandon entirely decorative items such as napkins & table cloths. And for an indefinite period they will not promote either napkins or T.T., selling only when the items are demanded.

Due to the price situation they will promote principly the sale of boxed wax paper for home use.

In view of this management policy on napkins & T.T. They went to the package offering lowest cost on both material & labor cost. A simple folding carton answere this purpose and so far seems acceptable to the jobbing track. Stompe's reaction to the Cellophane package in favorable, but under present conditions they will follow a policy of not promoting sales at any point along the line of distribution.

4. Specialty napkin units.

5. None.

M 5364

Defendant's Exhibit No. 225

R-12915

DUPONT

Cellophane

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman H. J. Eiseman Date 11/8/39 No. 418

Firm CORONA CORPORATION Bus. Lamp Class 4-0 to 3-6

St. & No. 346 Claremont Avenue City J. City State N. J.

Controlled by:

Final Decision by (Titles) Martin Thurnauer, President Contacted on this call? yes

Buyer M. Goldman Contacted on this call? no

Others Contacted this call (Titles)

Changes in Mailing List? Withdrawn

Type of Call—Productive X Service Comp.

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material, state type and reasons
Celluloid	500	Cy Acetate

Items wrapped in transparent sheeting: Lamp shades.

Other products on which Cellophane could be used: (Note new products in work) Above.

a. Specify sales tools used—below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Agreement account? no

e. Did you secure order? sample

Price reduction

Called to answer account's reply to price reduction letter.

Date of last Prod. Call Customer's request | Rec'd at District Office 11/10/39 | Date Typed 11/14/39 | Copies for G

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1.2. First call on active basis.

3. Lamp Shades ..
They had used MT film and buckling had caused so many complaints they abandoned it in favor of Celluloid's acetate. This has been satisfactory.

Covered our acetate and Thurnauer said could not

Defendant's Exhibit No. 226

R-12313

DUPONT

Cellophane

TRADE REPORT

(Trade Analysis Copy)

SALES COR.	CONV. SECT.
PROM. SECT.	PROD. DEV.
SALES SERV.	SERVICE SECT.
ADV. SECT.	PLANNING

Salesman H. C. Broems Date 12/5/39 No. 525

Firm Hoyt & Worthen Tanning Corp. Trade Chamois Class 3-6

St. & No. City Haverhill State Mass.

Controlled by:

Final Decision by (Titles) S. L. Worthen, Pres. Contacted on this call? Yes.

Buyer Contacted on this call?

Others Contacted this call (Titles)

Changes in Mailing List?

Type of Call—Productive X Service Comp. Visit Class

Sources of Supply	Est. Cons. lbs. this Calendar Quarter	If using competitive material, state type and reasons

Items wrapped in transparent sheeting:

Other products on which Cellophane could be used: (Note new products in work) Chamois.

a. Specify sales tools used—below:	d. Agreement account? No
b. Latest success story—below:	e. Did you secure order? No
c. Service and general remarks—below:	

a. "Cashing In".

"Impulse Sales Survey".

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
First -OwnLead	12/7/39	12/8/39	WZ

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1.2. None.

3. Chamois - printed bag of "Cellophane" (Now use printed glassine bags purchased from Royal).
Covered our retail store surveys indicating merchandising of chamois not keeping pace with trends to self-selling packages, which are proving successful on related items.

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: Kimberly Clark Corp.
SALESMAN: J.C.Couturier
DATE LAST REPORT: 3-24-49.
ST. AND NO.:
DATE: 5-5-49
CONTROLLED BY PURCHASING AUTHORITY:
CITY-ZONE-STATE: Neenah, Wisc.
CLASS: 1-12.
INDUSTRY: Paper

should write

DU PONT CELLOPHANE

SUPPLIER	USE THIS QTR.
DU PONT	6M
Shell.	10M

COMPETITIVE MATERIALS

MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
0						

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
R.E.Schwartz	Purch.	X	S	
L.C.Stilp	Gen.PA		M	
W.H.Gresenz	Prod.Stnds.		M	

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
Pocket Pack Kleenex	40M	300 MST 54	C	125M
Sanitary Belts	12M	MST	R	15M
Tampons	12M	"	R	15M
TOTAL				

B-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. Status re Cellophane on "Pocket Pack".
2. According to info. Schwartz has, they still will use both Cellophane and glassine as at present. Info. given him does not indicate any data re other materials.

We brought up the idea of using a humidifier in connection with the actual machine wrapping operation to induce a greater amount of moisture in the film at the time of wrapping such as is done by Cooper's, Inc. in Kenosha when they fabricate their bags for Jockey Shorts. Schwartz thought the idea had merit and requested data in a letter for him to submit to Gresenz for consideration.

Writer will handle and send necessary literature to Schwartz.

5. (b) CC: C. W. Shields. WILMINGTON HANDLE

MAY 13 1949

M 5041

4600

453

Defendant's Exhibit No. 222

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: Kimberly Clark Corp.
SALESMAN: J. C. Couturier
DATE LAST REPORT: 6-16-49
ST. AND NO.:
DATE: 11-10-49
CONTROLLED BY PURCHASING AUTHORITY:
CITY-ZONE-STATE: Neenah, Wisc.
CLASS: 1-12
INDUSTRY: Paper

copy of Sales Hunter

DU PONT CELLOPHANE

SUPPLIER	USE THIS QTR.
DU PONT	6M
Shell.	10M

COMPETITIVE MATERIALS

MANUFACTURER	BUYS THROUGH	PT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
C						

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE
R. E. Schwartz	Purch.	X		
E. Janzow	"	X		

RETURN TO CELLOPHANE TRADE ANALYSIS

PRODUCTS AND CELLOPHANE WRAPPING

PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. (a) Status re "Pocket Pack" Kleenex.
(b) Competitive data re glassine uses.
2. (a) No change in plans concerning present package. Will to continue to pr[illegible]th Cellophane and glassine units.

We advised of 450 K-202 and its properties and price. Schwartz interested only in film from standpoint of its properties. Stated price ruled out its consideration. Wants data and samples only for completing his files.

(b) According to Schwartz, they are using about equal amounts of Cellophane and glassine. Their present policy is to use Cellophane below the Mason & Dixon line during winter season and glassine up north.

During summer months both films are used without territorial restrictions.

M 5042

4601

454

Defendant's Exhibit No. 223

then pl cing the label on the paper, but this has slowed up their operations, and also the paper comess loose from the Cellophan (se below)

Phone, Non-Interview and No Change Calls not reported since last call.

Date of last Prod. Call.	Rec'd at Branch Office	Date Typed	Copies for
11-12-30	4-1-31,	4-1-31	

*Phone, Non-Interview and No Change Calls are not to be reported unless important information is developed.

CREATIVE WORK DONE

1. Men interviewed and titles.
2. Products on which Cellophane could be used.
3. New products under development.
4. New items in Cellophane released since last call.
5. Result of suggestions on last call.
6. New suggestions made on this call.
7. Accomplishments on this call.
8. What is plan for next call?
9. What assistance can organization give you?

FOR PRODUCTIVE CALLS ANSWER EACH QUESTION NUMERICALLY BELOW

SERVICE CONT.
I suggested placing the label on the shade under Cellophane and sealing the end with 559 adhesive. Factory Supt. approved this and will try, am sending sample. also suggested applying #559 on the label for sticking, they will try this also. They recently sent a shade and fittings to 2 Park Ave. in this connection for observation and suggestions. Will check them in short time to see if difficulties have been overcome.

1- K.B. Miel, S.E. T.A. Beard, Factory Supt.

2- indow shades, fittings and curtain fabrics.

3- None
4- "

5- Are now placing the small Cellophane wrapped package of metal fittings at the end of each rolled shade and overwrapping the shad and this, together.

6- A. Extension of Cellophane to all shades in lower priced lines, instead of 1 in every dozen as at present.
B. 450 P.T. overwrap on large cylindrical rolls of window shade fabrics.

7- A. Claim price still too much for Cellophane to replace brown kraft paper on all cheaper lines.
B. Very enthusiastic on this-have experimented some with 300, am sending them 450, as the roll is too heavy for former.

"over"

1/4/150

8- Check results as described under (a) above, push for adoption of V-B. ork on colored wraps for their holiday lines (not ready for this as yet

9- None

(4603 456)

Items wrapped in transparent sheeting: Lamp shades.

Other products on which Cellophane could be used: (Note new products in work) Above.

a. Specify sales tools used—below:	d. Agreement account? no
b. Latest success story—below:	e. Did you secure order? sample
c. Service and general remarks—below:	

Price reduction

Called to answer account's reply to price reduction letter.

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
Customer's request	11/10/39	11/14/39	G

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1.2. First call on active basis.

3. Lamp Shades ..
They had used MT film and buckling had caused so many complaints they abandoned it in favor of Celluloid's acetate. This has been satisfactory.

Covered our acetate and Thurnauer said could not see reason to change if no price differential.

Asked that they test our film to prive its strength, ease of handling, etc., and then make decision.

Will do. Sending sample.

4. Get test underway to prove quality and as today use additional argument that they buy chemicals, etc., from us, know our cooperation and one source is better.

5. Route sheet, please. (Issued 11/14/39.)

12/27 P (11/8) Mr. Stahl. Have tried sample rolls of acetate for lamp shade wrapping. This they say proved to be weaker than material furnished by Celluloid Corp. and broke quite frequently. Also asked us for prices for rolls 3" O.D. wound on small "hand" cores. Suggested they continue experiments with our material based on fact that it usually has proved stronger than competitive film. Agreed to try another roll which we ordered for them.

Harrington

Items wrapped in transparen.. sheeting:

Other prod'ts on which Cellophane could be used: (Note new products in work) Chamois.

a. Specify sales tools used—below:	d. Agreement account? No
b. Latest success story—below:	e. Did you secure order? No
c. Service and general remarks—below:	

a. "Cashing In".

"Impulse Sales Survey".

Date of last Prod. Call	Rec'd at District Office	Date Typed	Copies for
First -OwnLead	12/7/39	12/8/39	WZ

CREATIVE WORK DONE

1. New items on market since last call or order placed—distribution, potential.
2. Result of suggestions made on previous calls.
3. Creative suggestions to extend use of Cellophane made on this call and customer's promised action?
4. What is your plan for next call?
5. What assistance can organization give you? (See back of report)

1.2. None.

3. Chamois - printed bag of "Cellophane" (Now use printed glassine bags purchased from Royal).

Covered our retail store surveys indicating merchandising of chamois not keeping pace with trends to self-selling packages, which are proving successful on related items.

Fact is very few packaged, branded or carry selling copy which dramatizes various uses of product. This condition offers excellent opportunity for them to step out of competition with real merchandising unit.

Suggested printed bag with thumbnail sketches dramatizing uses of product & instructions for caring for it to insure long life.

(R) Stated they have secured price quotations from Royal from time to time and rejected on cost basis. Pay $5 - 6 per M. for glassine and $11 - 12 for "Cellophane".

We covered price reduction and urged getting new quotations. Further pointed out addition of ½¢ to product which retails for $1. certainly small item, considering benefits they can expect - increased volume thru impulse sales & competitive advantage.

4. Break down cost item by present polishing cloths & gauze in "Cellophane" bags retailing for 10¢.

5. Route sheet. (Issued 12/8 WZ)

CREATIVE ACTIVITY

c. Spent some time in plant going over possible production set up, sheeters, gluers, costs, type wraps, etc.

CREATIVE ACTIVITY

1. New items on market since last call—supplier, distribution, annual potential.

2. Result of suggestions made on previous calls.

3. Creative effort: (a) Objective this call? (b) Specific suggestions made; including evidence from your retail store surveys. (c) Action promised by customer?

4. What is your plan for next call?

5. Action needed by: (a) District Office (b) Headquarters.

1 - 2. None.

3. a. Window shades

b - c. I approached on the basis that altho they enjoy a considerable volume, there must be a large potential market that is very skeptical of a 10¢ window shade, and that a glance at their pkg. only perpetuates their skepticism. He agreed with me 100%. He also concurs that Cellophane would give them the class they need. It came back, however, to proposition that Cellophane is just 5½ times the cost of Kraft they are using.

However, they have developed an automatic wrapping machine (still has bugs in it) and this may be an opportunity later on. However, it has inflexible, needlessly long cut off, which holds up cost.

Suggested why not the 35¢ washable shade, still hand wrapped. On this there was interest, and I suggested a sheeter-gluer set up, which may do the trick. However, this shade has a roller in and presents a new set of problems, spiral wrapping being undesirable as they would print Cellophane. Brought along a shade with me to see if I can develop proper pkg.

4. Follow

5. None.

M 5052

Defendant's Exhibit No. 22

R-12319

DU PONT

Cellophane
TRADE MARK

TRADE REPORT
(Trade Analysis Copy)

SALES COR	
PROM. SECT	
SALES SERV.	
ADV. SECT	
CONV. SECT.	
PROD. DEV.	
SERVICE SECT.	
PLANNING	

Salesman: A. G. Cloudsley — Date: 10-15-40 — Type Call: P

Firm: Clopay Corp. — Date last Call: 4-25-40 — Type Call: P — Date last Prod. Call: 4-25-40 — Class: 2-6

St. & No.: Dayton & McLean Sts. — Bus.: Paper spec.

City & State: Cinn., Ohio — Controlled by:

Final Decision by (Titles): Sam Johnson, exec. V.P. — Contacted this call? no

Buyer: A. L. Thexton, V.P. sales — Contacted this call? yes

Others Contacted this call (Titles):

Sources of Supply	Est. Cons.-lbs. this Calendar Quarter	If using competitive material state type and reasons
Us converter		

RETURN TO "CELLOPHANE" TRADE ANALYSIS

Items in transp. sheeting: (specify which is competitive or converted film)

Converter items

Other potential products:

Paper windo shades, gift papers, display papers, wall paper, Venetian blinds.

a. Sales aids used—specify below:

b. Latest success story—below:

c. Service and general remarks—below:

d. Mailing list changes—below:

e. Agreement expires? Converter

f. Did you secure order? no

a - b. None

c. Spent some time in plant going over possible production set up, sheeters, gluers, costs, type wraps, etc.

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

DIRECTOR OF SALES

FIRST CALL: C

CUSTOMER: hw TALON INC.

SALESMAN: J. A. PIE'

DATE LAST REPORT: 6/16/49

ST. AND NO.: 600 Arch St.

DATE: 8/23/49

CONTROLLED BY PURCHASING AUTHORITY

CITY-ZONE-STATE: Meadville, Penna.

CLASS: 1-12

INDUSTRY: Misc.-Slide Fasteners

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	FT., MT., CA., ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	59.5M	Goodyear	Direct	Pliofilm	0	0	6,000	

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
J. E. Moore	Buyer	X		
C. Blass	Planning	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

B-12727-A * R-ROLLS S-SHEETS C-CONVERTED

1. (a) Find out if machine has been converted to run Pliofilm.

   (b) Suggest MST-54 instead of MST-52 to give more durability.

2. (a) Machine has been returned by Goodyear. Report Pliofilm running satisfactorily at rate of 60,000 slide fasteners per day. Machine speed on Cellophane the same.

   (b) Will order 1,000 lbs. MST-54 to compare machine operation with MST-52. If no different will switch to 54.

3. Have started to operate two shifts again and expect this to continue indefinitely.

A Midwest miller is including a slide fastener along with feed in printed sacks for benefit of farmer's wife.

AUG 26 1949

M 5086

4607

462

Defendant's Exhibit No. 229

CELLOPHANE TRADE REPORT - TRADE ANALYSIS COPY

FIRST CALL ☐

CUSTOMER: hw TALON INC.

SALESMAN: J. W. MILLER

DATE LAST REPORT: 10/25/49

ST. AND NO.: 600 Arch St.

DATE: 12/12/49

CONTROLLED BY PURCHASING AUTHORITY:

CITY-ZONE-STATE: Meadville, Penna.

CLASS: 1-12

INDUSTRY: Misc. Slide Fasteners

DIRECTOR OF SALES

DU PONT CELLOPHANE		COMPETITIVE MATERIALS						
SUPPLIER	USE THIS QTR.	MANUFACTURER	BUYS THROUGH	FT., MT., CA. ETC.	1ST QTR. PUR.	2ND QTR. PUR.	3RD QTR. PUR.	4TH QTR. PUR.
DU PONT	30M	Goodyear	Direct	Pliofilm	0	0	6M	6M

REPORT CALL BELOW

SEE REVERSE SIDE FOR GUIDE

OFFICIALS	TITLE	INT'VD	MAIL TO	M. L. CHGE.
J. E. Moore	Buyer	X		

PRODUCTS AND CELLOPHANE WRAPPING				
PRODUCT	PRESENT ANNUAL CONSUMPTION	TYPE FILM (CODE)	R S C	ANNUAL POTENTIAL
TOTAL				

R-12727-A

• R-ROLLS S-SHEETS C-CONVERTED

1. (a) Activities at Cleveland, Ohio and Hamden, Conn. plants.
   (b) Follow up use of MST-54.

2. (a) Cleveland, Ohio plant is only a manufacturing operation. No packaging is done at this location.

   Hamden, Conn. plant is both manufacturing and packaging plant. Similar to the Erie, Pa. operation only on a much smaller scale. Expect this location to grow in the future until it becomes as large as the Erie plant.

   (b) Have placed 5M lb. order. Will experiment further.

3. During interview, Pliofilm was discussed. Intended to submit cost comparison of our 450 MST-54 vs. Pliofilm. However, we did not submit figures when Mr. Moore mentioned that their Pliofilm costs 97¢ per pound having a yield of 31,000 sq. in. per pound.

	Cost per 1M sq. in.
Pliofilm	$ .0313
450 MST-54	.0343

M 5087

4608

463

Defendant's Exhibit No. 230

Defendant's Exhibit No. 231

Goodness Revealed

BROWN as a berry—light as a cloud—no wonder The Great Atlantic & Pacific Tea Company pride-fully reveal the natural goodness of Grandmother's Doughnuts through a crystal-like wrap of transparent Cellophane.

On a dealer's counter, these and many other Cellophane-wrapped baked goods outsell their competitors day after day. Shown at their best they never fail to appeal to passing shoppers.

Wrapped in grease-proof Cellophane, protected against dust, flies and handling, your products can be offered at new sales outlets you haven't tried before.

Let us wrap a sample of your product in Cellophane. See for yourself how it beautifies and protects.

DU PONT CELLOPHANE CO., Inc.
Sales Offices: 40 West 40th St., New York City
Plant and Executive Offices: Buffalo, N. Y.

Canadian Agents:
WM. B. STEWART & SONS
64 Wellington St., W., Toronto, Canada

Cellophane is a new wrapping material—unusual because it's absolutely transparent. It is strong, impervious to grease or dirt, and comes in many colors and embossed patterns.

DU PONT CELLOPHANE

REG. U. S. PAT. OFF.

Ad C 172

Bakers Helper—May 1, 1926
Bakers Weekly—May 22, 1926

8471 ★

Defendant's Exhibit No. 232

New altitudes of Transparency with..

Transparency . . .

plus economical cost

You cannot put too much cost into the wrapper at the expense of your cakes. Remember, repeat sales depend upon the quality of your cakes.

SUPER AQUALEEN

gives you all the transparency you need to show all the goodness of cakes with their appetizing appeal and at a low cost.

SUPER AQUALEEN

is super-transparent, super-moisture, super-greaseproof, and self-sealing. It prints beautifully in sheets or rolls.

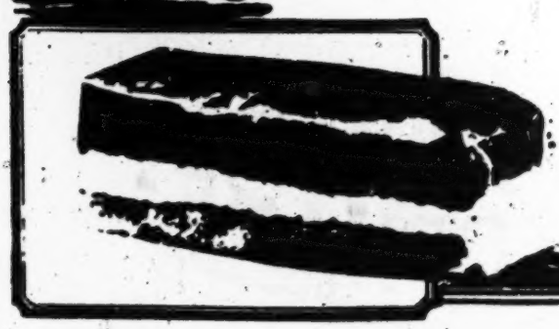
Wrap a few of your 5 and 10c items in SUPER AQUALEEN and convince yourself. What sizes would you like to try, with no obligation, of course?

Newark Paraffine & Parchment Paper Co.

Main Office and Mill: 48 Jolliff Ave., Newark, N. J.
N. Y. Office: 1071 6th Ave. Mill: Pittston, Pa.

NEWARK P & P COMPANY

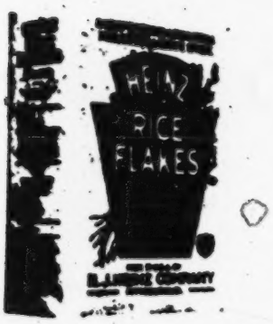
Made by the makers of
Newark Bread Wraps and Paraloon Bags



Bakers Weekly

Defendant's Exhibit No. 233

DX 233



Perfect Protection!
The H. J. Heinz Company has used KVP Waxed Paper for many years.

NOTHING PROTECTS LIKE WAXED PAPER

Not just how it looks as it leaves your plant—nor how it glistens on your dealers' shelves—but how it tastes on the consumer's table! By that measure, you stand or fall.

There are some startling new developments in food packaging —money saving—product improving. Let us show them to you. They may help you in this corner-turning business.

KALAMAZOO VEGETABLE PARCHMENT COMPANY

PARCHMENT (Kalamazoo County) **MICHIGAN**

MODERN PACKAGING

March 1953

M 5199

Defendant's Exhibit No. 234

Cellophane
TRADE MARK

NO ADMITTANCE TO DRYNESS